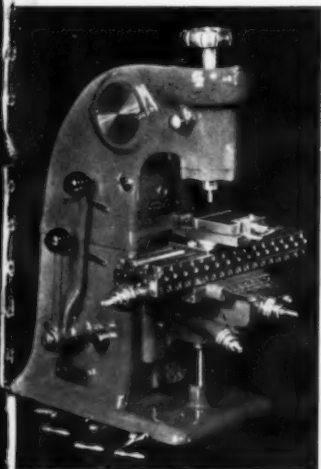


Hitchcock's Machine Tool Blue Book

APRIL, 1937

THIRTY-SECOND YEAR

HARDINGE MILLING MACHINE



**Bench Type
with
Preloaded Ball Bearing
Spindle
for
Precision Vertical Milling**

Designed for high spindle speeds, extreme accuracy and rigidity of spindle. Proper speeds for end mills from 1/16" to 1/2" in diameter.

Proportioned and constructed for rapid sensitive milling.

Offered with bench electrical driving unit for speeds up to 5,000 r. p. m. Profiling attachment, index head, tailstock and collets, etc., are also available.

Get complete information.

Send Quickmail Coupon No. 1 for bulletin BBV

HARDINGE BROTHERS, INC., - - - **ELMIRA, N. Y.**
CHICAGO — NEW YORK — PHILADELPHIA — DETROIT — HARTFORD

Sales Representatives in All Principal Cities

PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

In its price class the **MARVEL**

For the man that wants
speed when sawing
and wants it at a price,
there is no sawing ma-
chine like the MARVEL
No. 4B.

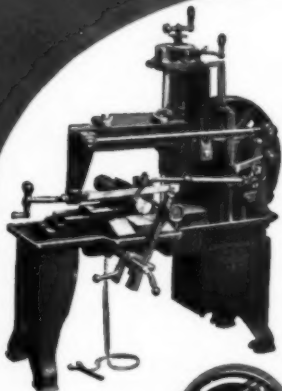
Fast, straight-cutting, ac-
curate, it will out-cut
any hack saw in its price
class. It will stand up
and give years of service
on ordinary shop sawing.

No. 4B capacity 6"x6".
Equipped with swivel
rise, automatic stop, ad-
justable end gauge, belt
or motor drive, both
power and hand screw
feeds, quick return on
non-cutting strokes and
blade automatically
raises above work at
completion of a cut.

For continuous produc-
tion sawing, we recom-
mend the Heavy-Duty,
all ball bearing MARVEL
Saws Nos. 6, 6A, 9, or
9A (Capacities to 10"x
10") with or without

**number 4-B
out-cuts all
others**

CAPACITY 6"x6"



*Use Reply Mail Coupon
No. 5 when you write
for Bulletin*

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

341 N. Francisco Ave.,

CHICAGO, U. S. A.



LESS BREAKAGE

WELDON

DESIGN TOOTH
END-MILL FORMATION

OLD STYLE

WELDON

PAT. PEND.

THE
WELDON
TOOL CO.

321 FRANKFORT AVE

CLEVELAND OHIO

Pioneers in Fast Spiral Double-end End Mills

Four Points to Consider!

Weldon End-Mills Have

1. Form-Milled Teeth—For uniform size of flutes, maximum strength.
2. Ample Chiproom—For rapid chip ejection, no clogging.
3. Strong End Teeth—Made possible by the cupped end.
4. Uniform Hardness—Thru careful metallurgical treatment.

The successful combination of these points means less breakage and outstanding performance.

We Can Prove It!

For
information

send Quickmail
Coupon No. 37



In its price class the **MARVEL**

For the shop that wants speed when it's sawing and wants it at a price, there is no sawing machine like the MARVEL No. 4B.

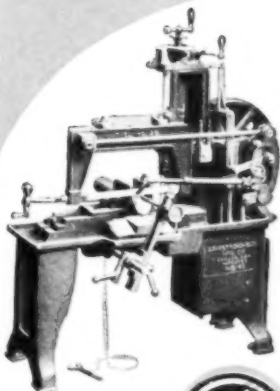
Fast, straight-cutting, accurate, it will out-cut any hack saw in its price class . . . will stand up and give years of service on ordinary shop sawing.

No. 4B capacity 6"x6". Equipped with swivel vise, automatic stop, adjustable end gauge, belt or motor drive, both power and hand screw feeds, quick return on non-cutting stroke; and blade automatically raises above work at completion of a cut.

For continuous production sawing, we recommend the Heavy-Duty, all ball bearing MARVEL Saws Nos. 6, 6A, 9, or 9A (Capacities to 10"x10") with or without automatic bar push up.

**number 4-B
out-cuts all
others**

CAPACITY 6"x6"



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ARMSTRONG-BLUM MFG. CO.

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LESS BREAKAGE

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END-MILL FORMATION

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THE
WELDON
TOOL CO.

321 FRANKFORT AVE.

CLEVELAND - OHIO

Four Points to Consider!

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4. **Uniform Hardness**—Thru careful metallurgical treatment.

The successful combination of these points means *less breakage* and outstanding performance.

We Can Prove It!

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information

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"Pioneers in Fast Spiral Double-end End Mills"

Rivett

DRAW-IN COLLETS AND CHUCKS



SPRING TEMPERED

Scientifically heat treated to a true spring temper, "RIVETT MARK" collets resist wear and hold their spring longer than collets of any other make. Carried in stock for all standard lathes and milling machines. *Write for Bulletin 100-B.*

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Chas. A. Strelinger Co.
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RIVETT LATHE & GRINDER INC.

BRIGHTON, BOSTON, MASS.

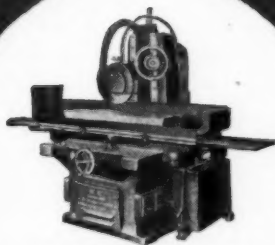
HIGH SPEED HYDRAULIC FEED SURFACE GRINDERS

Time Savings of 50% and More!

One customer reports grinding time reduced from 12 hours to 30 minutes—a prominent automobile manufacturer reduced grinding time on louvre dies from 6½ hours to 35 minutes—a third customer increases production on small typewriter parts over 50%!

Longitudinal table speeds up to a maximum of 125 feet per minute are obtainable on these Grand Rapids High Speed Surface Grinders.

Rugged, one-piece column and base castings guaranteed a permanent alignment between vertical head ways and cross saddle ways.



This is No. 65 in the series that covers every requirement. Use Quickmail Coupon No. 72 when you write for Bulletin.

MANUFACTURED BY

GALLMEYER & LIVINGSTON CO

305 STRAIGHT AVE., S. W.


GRAND RAPIDS, MICH

COLLET AND FEED

HARDINGE

COLLETS SINCE 1890

DRAW-IN COLLETS FOR ALL LATHES AND MILLERS



PROMPT
DELIVERY
FROM
STOCK.

FOR
— ACCURACY —
— DURABILITY —
— ATTRACTIVE PRICES —
"SPECIFY HARDINGE COLLETS"

Refer To Trade Pages For Your Requirements
Purchasing and Engineering Departments. Keep This List for Reference Purposes

Hardinge Collets are in stock for immediate delivery. Hardinge Collets embody these elements of precision which have characterized our products since 1890.

HARDINGE BROTHERS, INC., ELMIRA, NEW YORK

*Send Quickmail Coupon No. 2 for this bulletin No. 36
if you have*

LATHES and MILLERS

HARDINGE COLLETS FOR: American, Ames, Boye & Emmes, Carroll & Jamieson, Chard, Cincinnati, Cisco, Dalton, Flather, Greaves-Klusman, Hamilton, Hendey, LeBlond, Monarch, Porter Cable, Pratt & Whitney, Rahn Larmon, Reed-Prentice, Rivett, Rockford, Sebastian, Seneca, Sidney, South Bend, Springfield, Stark, Sundstrand and our own Hardinge Cataract Lathes.

HARDINGE COLLETS FOR: Ames, Becker, Burke, Pratt & Whitney, Reed-Prentice, Rockford, Stark, Sundstrand, Van Norman and our own Hardinge Cataract Millers.

Bulletin No. 36 gives complete information; dimensions of standard collets; lists attractive prices; makes ordering easy. Gives location of collet stocks in six important centers in the United States.

—SPECIFY HARDINGE COLLETS—

HARDINGE BROTHERS, Inc. - - - ELMIRA, N. Y.

FINGER SECTION

MORRISON

COLLETS

AND

FEED FINGERS



MORRISON MACHINE PRODUCTS, Inc.
ELMIRA, NEW YORK

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AUTOMATIC and HAND SCREW MACHINES

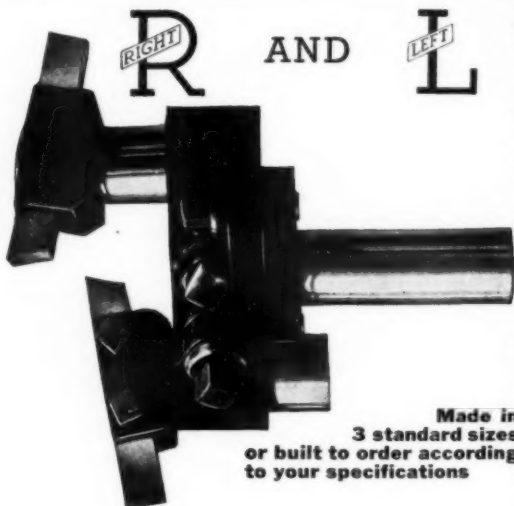
MORRISON COLLETS, FEED FINGERS, MASTER COLLETS, MASTER FEED FINGERS AND PADS FOR: Brown & Sharpe, Cleveland, Cone, Gridley, National Acme, New Britain, Davenport, etc., Automatics.

MORRISON COLLETS FOR: Bardons & Oliver, Cincinnati, Foster, Garvin, Pratt & Whitney, Warner & Swasey, etc., Hand Screw Machines.

Catalog No. 34A gives complete ordering information and lists attractive prices. Illustrates and describes Style "B" Morrison Master Feed Fingers and Pads which eliminate scoring of stock.

-STANDARD SIZES FROM STOCK-

MORRISON MACHINE PRODUCTS, Inc., ELMIRA, N. Y.



Made in
3 standard sizes
or built to order according
to your specifications

Save On Your Set-Up Costs With This Combination Tool

By using various adjustments, one R & L turning tool can be made to perform a variety of operations, singly or together, thereby saving not only tool costs but time required for setting up machines. Extremely fine adjustments are provided both on the tool and on the pressure of the burnishers.

Ask for complete details

R AND L TOOLS

Turning Tool



Entire tool is made
of heat — treated
alloy steel

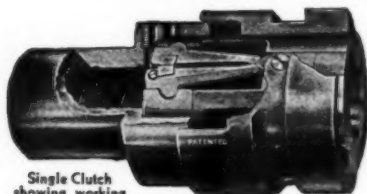
Easily Changed In 10 Seconds For Right Or Left Hand Work

Speed in making set-ups is essential to economy. An R & L Turning Tool can be assembled and adjusted quickly for almost any kind of turning work. Tantalum carbide faces on the backrest act as a burnisher, eliminating rollers and misalignment due to roller wear and producing a highly polished surface.

Send today for your booklet

R & L Nicetown, Philadelphia, Pa.

The JOHNSON



Single Clutch
showing working
parts

.. for better clutch performance under **ANY CONDITIONS**

More than thirty years of successful application of JOHNSON FRICTION CLUTCHES to practically all power transmission demands is behind every recommendation made by our Engineering Department. You can, therefore, depend on better clutch performance regardless of the severity of operating conditions, when you bring your clutch problem to JOHNSON Engineers for study.

Among the operating features which contribute to better performance are sensitive starting, safety, cleanliness, quietness, efficiency and long life.



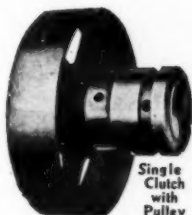
Double Clutch between bevel gearing

You incur no obligation in asking us to show specifically how you can improve power transmission on your machines. Just give us the details of your problem.

The CARLYLE JOHNSON MANCHESTER,

FRICITION CLUTCH

JOHNSON Clutches guarantee complete control of your machine. They start or stop the machine instantly. Equip your machines with JOHNSONS. High grade clutch service guaranteed.



Single Clutch with Pulley

.. for maximum serviceability in minimum space

The adaptability of JOHNSON FRICTION CLUTCHES to hundreds of different kinds of machines has been possible by the compactness of these sensitive, durable units.

Many leading manufacturers of industrial machinery have standardized on JOHNSON CLUTCHES because their adoption involved minimum changes in design, and assured a maximum in clutch performance.

In addition to compactness, JOHNSON CLUTCHES offer quick, smooth starting. They are available for high speed on light powered drives and can be depended on for safety, durability and economy.

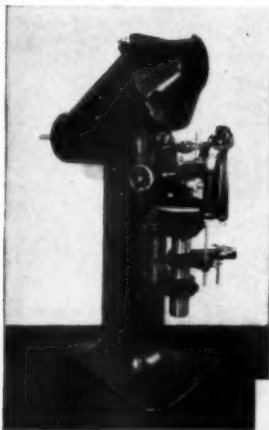
Let us show you how easy it is to engineer the JOHNSON CLUTCH into your machines. Just send us details of how you propose to apply the clutch. Ask for our assistance today.



Double Clutch Exterior

Send Quickmail Coupon No. 79 for your copy of Clutch Catalog No. 4-H

N MACHINE COMPANY
CONNECTICUT



PEDESTAL COMPARATOR



**INSPECTION
SPELLS
PERFECTION**
WHEN PARTS ARE
CHECKED ON A J&L
COMPARATOR

THE J&L Comparators meet the inspection requirements of tool room, laboratory, and production line.

They may be used to compare objects against a master outline, or to make direct measurements of height or depth and lead or spacing. They will measure angles within 5 minutes of arc.

The J&L Comparators are *the* machines on which to check each operation, on every part, so that your final product will bear an assured O. K. — let inspection spell perfection.



BENCH COMPARATOR

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JONES & LAMSON MACHINE COMPANY
SPRINGFIELD, VERMONT, U. S. A.

**"MODERN" MANUFACTURING
CORRECT SPEEDS
for END MILLS**

Tool	$\frac{1}{8}$ "-4000	$\frac{1}{4}$ "-1100	$\frac{1}{2}$ "-400	Approx.
Steel	$\frac{1}{8}$ "-2100	$\frac{1}{4}$ "-700	1"-250	Speeds

EKLIND
High Speed

MILLING
ATTACHMENTS
Have these speeds
And

MILL
DRILL
And
BORE

AT ANY ANGLE
IN ANY PLANE

- Four inch quill travel
- Faster cutting
- Fewer set-ups

Phone or write for prices and information. Use Quickmail Coupon No. 13

UNIVERSAL HIGH SPEED TOOL CO
549 Washington Blvd. Phone STAt 7761 Chicago, Ill.
DETROIT CLEVELAND
T. R. Wigglesworth T. R. Wigglesworth
Machinery Machinery
Phone Madison 6300 Phone Cedar 3545





- Accomplish joints of greater strength.
- Do it easily and efficiently.
- By using **SOLID RIVETS**, and by doing it on the

RIVITOR

An advanced type of riveting machine which solves the problem of automatically feeding and setting solid rivets.

The saving in cost through the substitution of solid rivets, where a quantity of rivets is used, will pay for a RIVITOR within a short space of time. We shall be glad to send you a circular

Use Quickmail Coupon No. 14 when you write for it.

THE TOMKINS-JOHNSON CO.

605 N. Mechanic Street Jackson, Michigan

European Office: Gaston E. Marbaix, Ltd., Vincent House, Vincent Square, London, S. W. 1, England.

1905

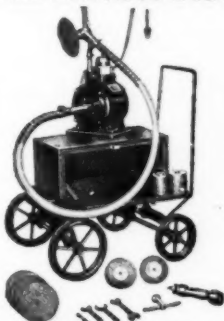


1937

FLEXIBLE SHAFTS AND MACHINES

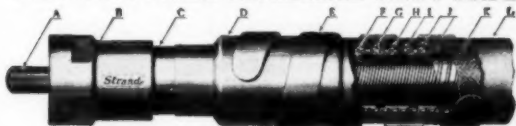
— HIGH QUALITY ONLY —
MACHINES FOR AUTO BODY SHOPS

We Build
Machines
in
Vertical
and
Horizontal
Types
 $\frac{1}{8}$ to 2 H. P.
Capacity



You Get
Quality
Only
When You
Buy
STRAND
Equipment

THE MOST POWERFUL FLEXIBLE SHAFT MADE



Send for our Catalog—Sixty Types and Sizes
Use Quickmail Coupon No. 26
FLEXIBLE SHAFT MACHINES

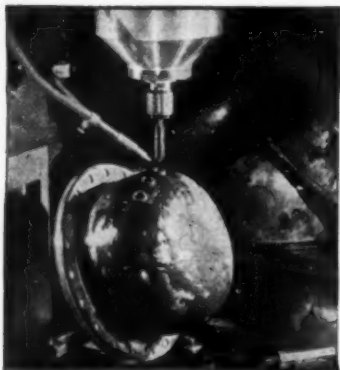
Manufactured by

N. A. STRAND & CO.

5001-5009 No. Lincoln St.

CHICAGO

ANGLE TAPPING *with* ABSOLUTE UNIFORMITY



One of a series of case histories showing tough jobs made easy by the Haskins Tapper.

Material -----
 Drawn Steel Shell
 Production -----
 (3 holes) 330
 pieces per hour
 Size of Tap -----
 1/4" straight pipe
 Style of Tap -----
 4 flute, cam face,
 special length
 R.P.M. of Tap 'in' -----
 550
 R.P.M. of Tap 'out' -----
 1100

A job "That Couldn't be Done" . . . NOW Done by the HASKINS Method

This job was a problem due to the fact that the face of the tapped holes is not at right angles to the tap. The tap must start cutting the thread on one side before the chamfer enters the hole. No three holes could be tapped alike. But Haskins had the answers: a rigid spindle . . . foot-pedal control . . . a simple fixture. No clamps. No hold-downs. Result: Three holes tapped on an angle with *absolute uniformity*. R. G. Haskins Co., 4654 W. Fulton St., Chicago. **Send Quickmail Coupon No. 21 for booklet.**



WHITNEY TOOLS



**No. 455 Angle Iron
Combination**

Capacity 2"x2"x $\frac{1}{4}$ "
Angle Iron or Smaller

Above cut is a regular No. 28 Foot Press rigged up with a set of notching punch and die for making Drive Cleats, used in air conditioning work. One customer claims to have earned the cost of the above equipment the first month.

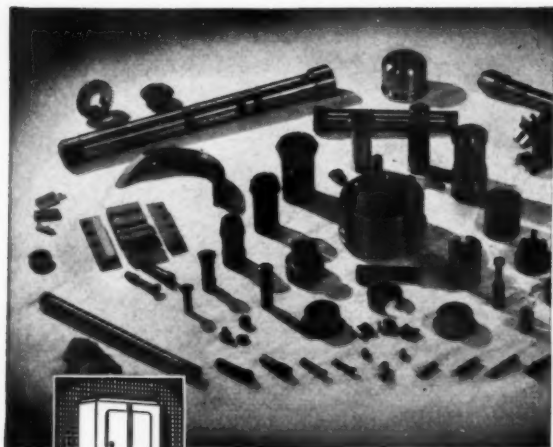
**WHITNEY
METAL TOOL CO.**

ROCKFORD,

ILL.

17

*Quickmail coupon No. 42
will bring you a catalog
of more than 80 types of
Whitney tools.*



Cold Facts

Tell the Story of "MODERN"

Modern in design . . . modern in efficiency . . . today's refrigerators stand out as perfect products of a truly progressive industry. Such an industry demands the best in equipment, materials and tools—and screw machine repair parts and tools have never been, and never will be, an exception to the rule. Today, **MODERN PRODUCTS**—supplied both to refrigerator manufacturers and suppliers—play a part in the production of *every* refrigerator made in this country. They are meeting every requirement for dependable, efficient operation . . . for long life . . . for economy. Follow the example set by over 1800 concerns operating screw machines. Specify **"MODERN PRODUCTS"**!

MODERN COLLET & MACHINE CO.



COLLETS with FELT FILLER PADS

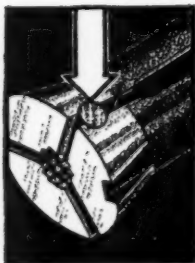
**Inside of Spindle
Kept Free from
Oil, Dirt and Chips**

Felt filler pads inserted in the slots of MODERN COLLETS eliminate the possibility of oil, dirt or chips being carried inside the spindle. Efficiency of the collet and associated moving parts is improved as no dirt or grit handicaps their operation. There is no possibility of chips or dirt packing around the collet, which often makes the removal of the job difficult when changing jobs. Cutting oil also is saved. Felt filler pads represent only one of the many outstanding advantages offered *only* with MODERN COLLETS.

EFFICIENCY

OUR APOLOGIES

Unforeseen circumstances have held up the production of our new catalog. However, IT'S NOW COMPLETE... your copy is ready. If you are not among the many whose requests we now have, **WRITE FOR IT TODAY!** For convenience, use Quickmail Coupon No. 28 when you mail your request.

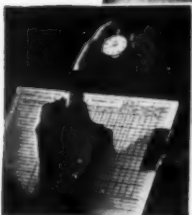


403 Salliotte St.,

ECORSE, MICH.

Save time and muscle with **KELLERFLEX**

Complete details and literature will be sent at the request of any interested executive.



Go out in your own shop and look over the hand work being done. Make a time study of it. Then try Kellerflex Flexible Shaft Machines and see the many hours of time and energy they save. These powerful, accurate little machines, and the hundreds of convenient attachments for them, make hand filing and "muscle" finishing obsolete. They do better work—and much more of it. They pay for themselves quickly, many times over. For power finishing there is no finer equipment than Kellerflex.

Quickmail Coupon No. 66 will bring a bulletin on Kellerflex Machines.

PRATT & WHITNEY
Division Niles-Bement-Pond Co. **HARTFORD, CONN.**

PRECISION GRINDING



*Die Grinding at
Dominion Drop
Forge Company*

Haskins Equipment meets all demands ... for precision work ... for increased production and lowered costs ... for portability and flexibility ... for ability to "stand-up" under "pressure" ... for quality and long life.

If you are Grinding, Sanding, Filing, Cleaning, Wire-brushing or Polishing — *investigate* Haskins money and labor saving equipment.



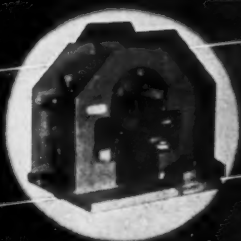
**HASKINS HS-4
SIX SPEEDS**

Use Quickmail Coupon No. 22. It will bring you catalog—full of valuable information.

R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO

Haskins
FLEXIBLE SHAFT EQUIPMENT
with Greater Adaptability

**When it's
TOOL-UP
TIME**

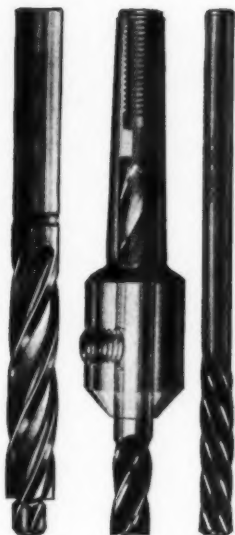


**....IT'S A
SWEET TIME TO PICK WELDING**

Consider the boring and back-facing fixture shown here. It is built of steel plate and bar stock by "Shield-Arc" welding. The overall saving, as compared to the old cast construction is \$17.50. Exclusive of machining, which is about the same for both processes, the welded design costs half as much as the cast! Moreover, weight was cut 35 lbs. and the time for production, 3.5 hrs.

Are you realizing the savings of "Shield-Arc" welding in the building of jigs and fixtures? Get the booklet describing this profitable tooling-up process.

THE LINCOLN ELECTRIC CO.
DEPT. AD-359 CLEVELAND, OHIO



CUT FASTER

PUTNAM
HIGH-SPEED
END MILLS

LAST LONGER



**Precision Tools for
Modern Production**

Warranted as to quality of material and workmanship, PUTNAM "Hi-Speed" cutting tools are recognized as a standard for accurate and economical performance. Our engineers will gladly aid in solving your cutting problems--just write

Other

PUTNAM Tools:

Reamers

Counterbores

Special Tools

Send Quickmail Coupon No. 67 for the PUTNAM CATALOG
No. 3—30 pages describing our modern line of cutting tools

THE PUTNAM TOOL CO.

2981 Charlevoix Ave.

DETROIT

MICHIGAN

TAPPING FOR



● **NOTE**— This illustration shows the new Procunier No. 1 Style 'E' high speed precision tapping attachment equipped with the new "TRU-GRIP" tap holder—Price \$35.00.

HERE IS THE
NEW
PROCUNIER
"TRU-GRIP"
TAP HOLDER

**THE MOST SENSIBLE TAP HOLDER
THAT EVER GRIPPED A TAP**

SEND FOR BULLETIN 436

ATTACHMENTS FOR ECONOMY

THEY WILL SAVE MONEY FOR YOU
ON PRODUCTION COSTS

Economy of operation is what counts today. Proconier style "E" high speed tappers have a reputation for the lowest upkeep expense possible on production jobs. They are built to stand up and give superior service. Style "E" tapping heads take the guesswork out of tapping, save tap breakage, increase production and greatly reduce spoiled work. These special features are made possible by "Proconier" superior design and higher quality.

OUR FRICTION CLUTCH—

has withstood the test of time. Since the beginning the special cork facings used in our double-cone friction clutch have proved to be the best friction material known. In addition, this special cork material will not wear or absorb oil. As a result our clutches will last indefinitely. This is just one more reason for "Proconier" superiority. Your shop deserves the best—specify "Proconier" Style "E" precision tappers with the new TRU-GRIP Tap Holder.

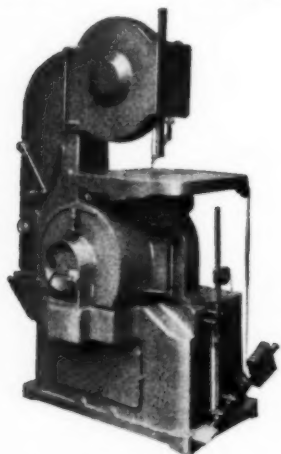
Let's prove these tappers now on your own tapping jobs.

PROCUNIER SAFETY CHUCK CO.

14 So. Clinton St.,

CHICAGO, ILL.

GROB Modern Die



**Open End Band Saw
Type O S - 20**

- No brazing or welding of the saw band is necessary for internal work.
- In 20 seconds the machine is set up for internal sawing.
- The only band saw with a positive drive to the saw band—provides faster cutting.
- Smooth cutting at all times without bumps because the band has no brazed or welded part.
- Easy to operate.



**Die Filing Machine
Type B-3**

- Continuous cutting removes stock rapidly.
- Positive drive to the file chain—no slippage.
- Continuous downward cutting prevents lifting up of your work and eliminates burr on top.
- Long life of the files—as there is no back stroke.
- Accurate files in various shapes provide smooth operation.
- Quickly set up for internal filing.

Quickmail Coupon No. 43 will bring complete details.

GROB BROTHERS,

Making Machines



In 20 seconds the Grob Open End Band Saw is set up for internal sawing. Complete time to saw out part shown was 2½ minutes.



Grafton, Wisconsin

Profitable Equipment—

Milling Machines

Grinding Machines

Screw Machines

Machinists' Tools

Cutters and Hobs

Pumps

Misc. Shop Equip.



Have you our general catalog
No. 140? A copy gladly
sent on request. Brown &
Sharpe Mfg. Co., Providence,
R. I., U. S. A.

BROWN & SHARPE

H & W DIEING MACHINES

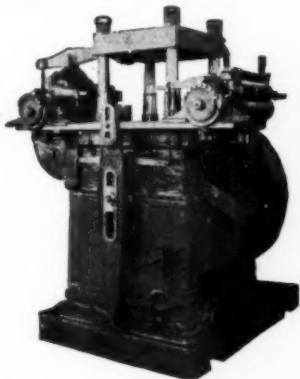
for Automatic Production

Long Die Life

•
Completed
Parts at Each
Stroke

•
Extreme
Precision

•
Completely
Automatic



Not just a press with a feed attached, the DIEING MACHINE is designed throughout for maximum results in automatic stamping production. Dies last longer because of scientific guiding and the precision limits to which the DIEING MACHINE is built.

*Use Quickmail Coupon No. 69 for your
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The Henry & Wright Mfg. Co.
HARTFORD, CONNECTICUT

The BLUE BOOK Establishes Make Your Inquiries With

Sign your Name, Title & Firm



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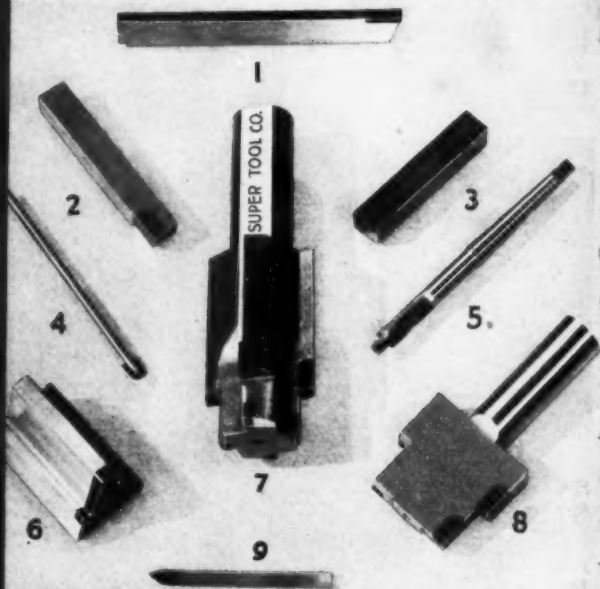
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... reputation earned by
PERFORMANCE

1—Piston Grooving Tool. 2—Standard Turning Tool. 3—Square Nose Tool.
4—Porcelain Counterbore. 5—Combination Drill Counterbore. 6—Form
Tool. 7—Four Fluted Step Reamer. 8—Flat Drill. 9—Glass Drill.

Super Tungsten Carbide Metals insure LESS BREAKAGE — MORE PRO-
DUCTION—GREATER ECONOMY.

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SUPER TOOL COMPANY
356 EAST CONGRESS ST., DETROIT, MICHIGAN

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3 and 4-Way Operating Valves

FOR AIR, WATER AND OIL



SHUT OFF VALVE



3 AND 4-WAY VALVE

Sturdy yet simple in construction, NOPAK Operating Valves offer long, efficient operation without maintenance cost, and with absolute freedom from leakage.

The NOPAK flat disc design provides advantageous port spacing, which insures positive, accurate control with both throttling or quick opening action, as desired.

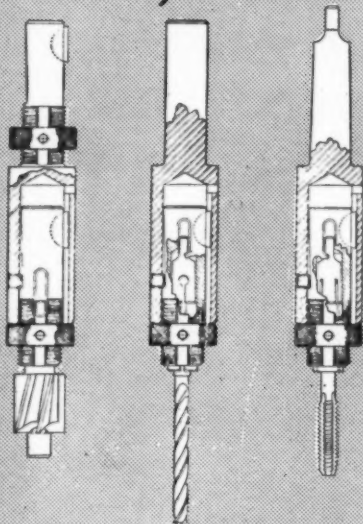
- ★ No Packing
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MANUFACTURING COMPANY
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ADJUSTABLE EXTENSION ASSEMBLIES

SCULLY-JONES adjustable extension assemblies have been designed to permit a quick adjustment of the tool, in multiple spindle work, without disturbing the entire setup . . . to lengthen or shorten assemblies, simply release the set screws in the nut and body, then turn the knurled nut to secure the correct adjustment.

Furnished in standard or special sizes

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SCULLY-JONES & CO.



1905 SO. ROCKWELL STREET, CHICAGO, ILL.

Send Coupon No. 40 for Catalog No. 105

HIGH SPEED WELDING

WITH AN ACE * SPOT WELDER

High power factor and high secondary voltage gives ACE Welders the capacity to weld materials faster than conventional types. They are built for fast, continuous production of wire and sheet metal products.

**DEPENDABLE
ECONOMICAL
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Entirely
self
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Simple to
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Sizes from 3 KVA Up
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Investigate economies with ACE Welders over bolts and rivets. Write today.

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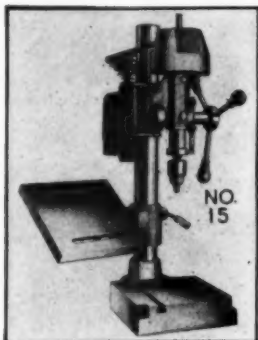
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EQUIPMENT MFG. CO.
621 Cross St., Benton Harbor, Mich.

"Buffalo"

POWER DRILLS

that will give you real
production



—and give you that production at lower costs because these drills have been designed and built with the same fine care and skill that is a definite part of all Buffalo Forge products.

No. 15

—may be used for small and large diameters. Has long driving sleeve which runs in 2 sealed ball bearings. Sleeve has 6 spline drive giving maximum driving power. 5 speeds — 3 spoke feed wheel—convenient table that tilts to any angle.

No. 16

— sensitive drilling machines are available in 1 to 6 spindles. Speeds range from 400 r. p. m. to 3000 r. p. m. Available in 3 types—Round Column Floor Type, Bench Type, and Pedestal Type. All spindles directly and rigidly supported. Tables close grain cast iron accurately planed. T-slotted wear plate can be supplied for the table to facilitate setting up and re-surfacing to original accuracy.

Complete information and literature gladly mailed on request.

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Branch Engineering
Offices in Principal Cities

Buffalo, N. Y.

IN CANADA: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

High Cycle



Have you been thinking about "High Cycle"?

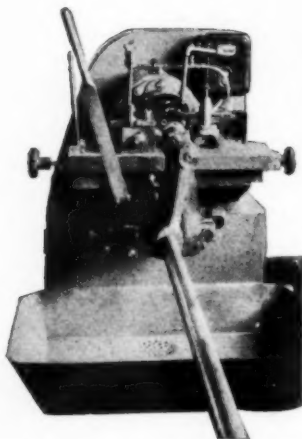
Here is a new booklet "The Facts About Rotor High Cycle Tools" which gives the engineering, production and operating facts about high cycle tools.

Send Quickmail Coupon No. 27 for your copy.

THE

ROTOR

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COMPANY
CLEVELAND, OHIO



**For
SPEEDY and
ACCURATE
Cutting of Pipe
and Tubing—**

MODERN Cutting - Off Machines can be depended upon to meet the exacting requirements of modern production. Ruggedly built, the base is made from welded I-beams and channels, while spindle is carried in extremely heavy casting on preloaded Timken roller bearings to give necessary rigidity.

MODERN Nos. 2, 3 & 4 CUTTING - OFF MACHINES

The operating cycle is smooth and efficient. The operator does not need to remove his hands from the control lever except to put a new bar of stock in the feed trough and slide it between the feed rolls. The new bar of stock then acts as a pusher for cutting the piece in the spindle. On ordinary tubing 9/16" O. D. 1/8" wall, 1000 pieces per hour is production obtained, larger tubing in proportion.

*Write today for complete information
Send Quickmail Coupon No. 80*

**MODERN MACHINE TOOL CO.
JACKSON, MICHIGAN**

**This New 40 Volt Arc Welding
will save hundreds of dollars
in your plant**



**30 DAYS
TRIAL**

in your shop
at our risk

PROVES

its your biggest
money-making
tool

It's Easy to Own!

Don't go another day without getting facts about how little it costs to own this amazing new tool that cuts costs squarely in two in pattern room, tool room, maintenance and production, as well as in jig and die work.

THE NEW HOBART 40 VOLT "SIMPLIFIED" ARC WELDER comes to you on 30 Days Trial—has remote control, current saving motor and features found in no other welder. Costs you less to operate—Handles either the low cost plain or coated rod with greatest of ease on light as well as heavy jobs. The coupon below brings valuable book. Hobart Bros., Box TB-47, Troy, O.

In answering use Quickmail Coupon No. 51

THE FASTEST SELLING WELDER ON THE MARKET

Hobart Bros., Box TB-47, Troy, Ohio
Gentlemen: Please send me, without obligation, complete details on the new Hobart 40 Volt Arc Welder, also the complete catalog on Easier, more profitable welding.

Name _____

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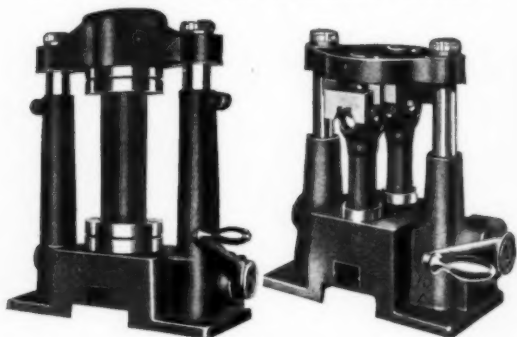
FREE!

IF YOU ARE
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IN THIS NEW
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Siewek Rapid Drill Jigs

A TYPE FOR EVERY JOB!



These Rapid Drill Jigs Insure Savings

Siewek Rapid Drill Jigs are designed to make big savings for high speed production shops.

Siewek Rapid Drill Jigs are constructed with a high factor of safety in all parts and have large wearing surfaces to withstand hard usage while maintaining their accuracy. They save energy, for the work is secured by cushion clamping.

They have ample loading clearance, chip clearance, and lubricating clearance.

Quickmail Coupon No. 57 will bring a catalog showing the complete line of Siewek Rapid Drill Jigs. The catalog will be sent only to those who give their names, titles and firm names.

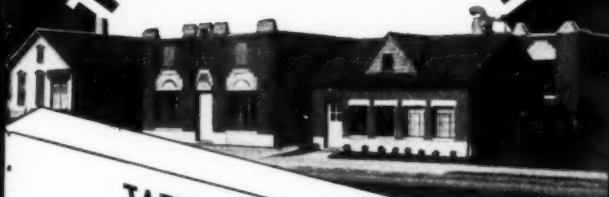
SIEWEK TOOL COMPANY
FERNDALE MICHIGAN

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Use Quickmail Coupon No. 64.

The new Willey's catalog illustrates our complete line of tungsten carbide tools, diamond impregnated wheels, diamond impregnated dressing tools, wear resistant parts for gauges, cutters and rest blades.

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CARBIDE TOOL CO.

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HOLLOW SET SCREW

Even under the toughest punishment, "UNBRAKO" Hollow Set Screws hold fast and stay put. Made of alloy steel, heat treated — they're tough and hard so points don't mushroom and hex won't round.

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Hitchcock's **Machine Tool Blue Book**

**Selected
Circulation**

**25,000
Monthly**

APRIL, 1937

THIRTY-SECOND YEAR

JOHN D. VAN KAMPEN

With deep sorrow we announce the death on March 8th of our friend and business associate, Mr. John D. Van Kampen, late Secretary and Treasurer of the Hitchcock Publishing Company. He had been associated with the Hitchcock publications for over 27 years.

He was called by death while on a vacation in San Francisco with his wife and youngest son.

Mr. Van Kampen leaves a wife and four children—three sons and a married daughter.

We shall all miss our associate greatly, for those who knew Mr. Van Kampen knew a friend of splendid qualities. We feel we have been fortunate to have had him with us these many years.

Published By

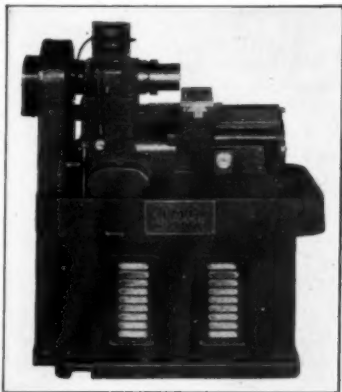
Hitchcock Publishing Co.
508 S. Dearborn St., Chicago, Ill.

Consult the Classified Finding Index for your requirements

New Lo-Swing Imp Lathe

The Seneca Falls Machine Company, Seneca Falls, N. Y., announce a new model of the Lo-Swing Imp lathe with a modern trend in its lines, although the basic features remain the same. Capable of heavy cuts at high speeds, added features permit greater flexibility and economy in tooling, it is claimed, and provide a design engineered to take full advantage of, and provide best possible results from, the use of cemented carbide tools. Intended primarily to handle work requiring high speeds and accuracy, it is also suitable for turning heavier work such as small pistons, bushings and gear blanks.

An extremely long bearing on the carriage is obtained through the unique headstock design, which permits the carriage slide to pass under it. The carriage is mounted on a flat and a vee way. Longitudinal movements are obtained by a drum cam. An end cover plate facilitates the quick removal of this cam and permits timing the



machine for automatic stopping and easy adjustment of the cams for carriage cross feed, when used. Feeds from .0005" to .050" per revolution are obtained by means of pick-off gears. The finer feeds are desirable for diamond turning.

Easily removed panels in the motor base are provided, and the main motor drive is mounted on a motor plate in the base, as is the coolant pump, main clutch and brake, when used. Spindle drive is by means of V-belt or chain. Main parts of machine are lubricated by means of a pump mounted in the

(Continued on Page 46)

DO IT—

Better—Faster—for Less!

with **ODIN UNIVERSAL**

**Precision Vises
Swivel and Plain**

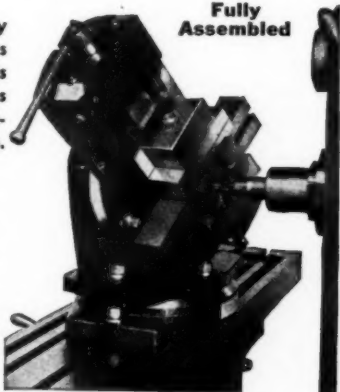
with Interchangeable Jaws and
Hardened and Ground Parallels

They quickly pay
their costs in savings
on High Tool Costs
—Expensive Fixtures
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ings—Extra Set-Ups.

**Fully
Assembled**

Investigate the
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Send Quickmail Coupon
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Let us show you how to make cheaper and
better jigs and fixtures at a greatly reduced
cost—with a great saving in time.

ODIN UNIVERSAL
CORPORATION

CHICAGO

**Sales Division
110 S. Dearborn st.,**

**Telephone
Franklin 3281**

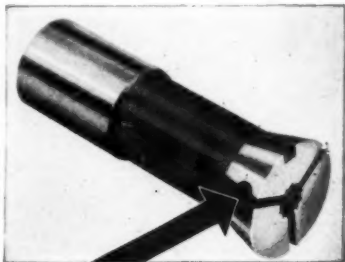
bed. All shafts are mounted on anti-friction bearings and the spindle is mounted on precision preloaded ball bearings, so constructed that spindle speeds up to 5000 r.p.m. may be maintained. An automatic stop is provided for stopping the machine at the end of its cycle and a hand lever is provided by which the machine may be stopped anywhere within the cycle.

The machine illustrated is equipped with a magnetic chuck for facing discs, but the Imp may also be equipped with a tailstock for between-center work. Tail-stock may be provided for lever or air operation and also with a quill carrying a built-in revolving tail center. Machine weighs approximately 2000 lbs., swings 9 $\frac{1}{4}$ " over carriage and 4" over the cross slide and takes 8" between centers.

Modern Collet Offers New Feature

An exclusive feature, introduced recently and now furnished as standard with all collets manufactured by the Modern Collet and Machine Company, Ecorse, Michigan, is said to offer distinct advantages in increased screw machine efficiency and economy.

Felt filler pads, inserted in the slots of the collet, keep all oil, dirt and chips from being carried inside the spindle. This permits more efficient operation of the collet and its associated moving parts, as the handicap of dirt and grit is eliminated. When changing jobs, the removal of the collet is unhampered by dirt and chips which often are packed tightly inside the spindle.




These pads save cutting oil, particularly when a job necessitates the direction of a stream of oil directly toward the collet, for the pads prevent the oil from passing through the collet and collet tube and out of the back end of the spindle where it is sprayed to the floor. The floor around the machine is kept cleaner and all collet operations are improved.

INTRODUCING THE

NEW SLOW-SPEED

SKILSAW

ELECTRIC DRILLS



● Built especially for drilling in steels of high nickel content, such as Monel and Allegheny metals, stainless steel, etc. Both models available in speeds of 350, 450, 600 and 750 R. P. M. — can't be stalled even at top drilling speed!

These new SLOW-SPEED Skil saw Drills lengthen the life of twist-drills, eliminating the need for frequent sharpening. The $\frac{1}{2}$ in. model is new in design for a drill of this capacity. Its one-hand grip feature makes it ideal for close quarter work and for use with hole saws in places impossible to reach with side-handle drills. Both models especially adaptable to wood boring.

MODEL 44— $\frac{1}{4}$ in. \$39

Capacity in steel $\frac{1}{4}$ in. in wood $\frac{1}{2}$ in. length overall
14 in. weight 6 $\frac{1}{2}$ lbs.
standard speed 750 R.P.M.
450 600 optional:
half bearing construction

See Your
Distributor
send Quotation
Coupon
for Our Catalog

MODEL 84— $\frac{1}{2}$ in. \$48

Capacity in steel $\frac{1}{2}$ in. in wood $1\frac{1}{4}$ in. length overall
14 in. weight 8 lbs.
standard speed 750 R.P.M.
450 600 750 optional:
half bearing construction

SKILSAW, INC.

314 ELSTON AVE., — CHICAGO

210 E. 40th St., New York — 22 Brooklyn

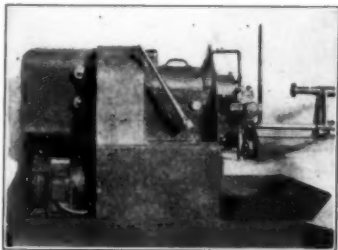
San Diego — 212 Ocean Ave., Los Angeles

Modern Machine Tool Co. Adds Three New Cutting-off Machines

The Modern Machine Tool Company, Jackson, Michigan, announces the addition to their line of three new cutting-off machines, Nos. 2, 3 and 4. These machines are made with anti-friction spindle bearings and heavier construction, operating on the same general cycle as the bronze bearing machines which this company has made for a number of years.

The bearings, in order to have inside diameter, are extremely heavy for the work they are required to do. The bearings and cross slides are carried on a massive body casting, giving the machine high rigidity.

These machines are designed primarily for cutting tubing and pipe where an accurate, square, lathe cut is required, with little burr, and length held to close limits and are made for high production. The cycle of

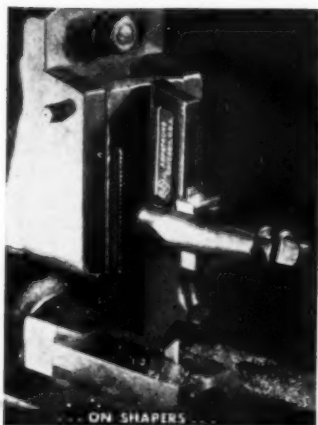


operations is as follows: The out-movement of the cross slide lever brings the tools from the work, and the stock stop into place. The in-movement of the collet control lever opens the collet and brings the stock feed rolls up to the stock. A slight pressure feeds the stock, any length, until it strikes the stock stop. The outward movement of the collet lever throws the feed rolls clear of the stock and closes the collet. The in-movement of the cross slide lever drops the stop back clear of the work and makes the cut-off. This cycle can be made in one second. On lengths over 2", there is a slight wait for feeding time. On standard tubing good results are obtained with a surface cutting speed from 250 to 300 feet per minute, and from .002" to .003" feed per revolution. Allowing one second for

(Continued on Page 50)

ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE



PROFITS Start in the TOOL ROOM

Well started, most jobs are half done . . . but a bad start is certain to gather trouble all the way through the plant. Delays in the tool room steal profits from all departments.

Logically, any modernizing program starts in the tool room, starts with **ARMSTRONG TOOL HOLDERS**. The Armstrong System provides dependable tools for every operation on lathes, planers, slotters and shapers—permanent multi-purpose tools that reduce "tooling-up" to the selection of a cutter and tightening of a set screw. With **ARMSTRONG TOOL HOLDERS** you are always "ready-to-go"; are certain to start and finish *on schedule*. Strong, rigid, correctly designed and absolutely dependable, they will stand up at any machine tool speed or feed, will deliver hour after hour, day after day, year after year and will "Save All Forging, 70% Grinding and 90% High Speed Steel" on every running foot.

If you are not up on the latest developments in the Armstrong System, write for Catalog B-35. Use **QUICKMAIL COUPON No. 6**.



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U.S.A.

Eastern Whse. & Sales: 199 Lafayette St., New York

indexing, one second for each foot of stock fed through spindle, and adding the time required for cutting-off at above cutting speeds and feed, will give enough data to estimate cutting time of any piece of tubing. On small tubing, 1000 pieces per hour is average production, larger parts in proportion.

Complete information regarding these machines may be obtained by writing directly to the Modern Machine Tool Company.

Skilsaw Slow-Speed Drills

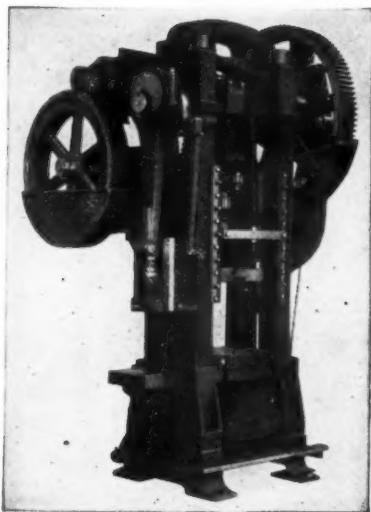
Two new additions to the line of Skilsaw ball bearing electric drills are being announced by the manufacturers, Skilsaw, Inc., 3304 Elston Ave., Chicago, Ill.

The new $\frac{1}{4}$ " and $\frac{1}{2}$ " slow-speed high torque Skilsaw drills have been developed particularly for drilling in steels of high nickel content, such as Monel and Allegheny



metals, stainless steel, etc. The slow speed of these new tools lengthens materially the life of twist drills, eliminating the need for frequent sharpening. Drilling speed, however, is not sacrificed because the high torque feature makes it impossible to stall the drills at maximum drilling capacities. The $\frac{1}{2}$ " model is particularly interesting because its design is new for a drill of this capacity. Its one hand grip feature makes it ideal for close quarter work and for use with hole saws in places impossible to reach with side handle drills.

Both models are available in speeds of 350, 450, 600 and 750 r.p.m. Their slow speed makes them especially adaptable to wood boring. Smoothness of operation is assured by ball bearings on armature and spindle. Aluminum alloy bodies give strength, durability and light weight. The $\frac{1}{4}$ " drill is 14" long and weighs only 6½ lbs.; the $\frac{1}{2}$ " drill is 14½" long and weighs 8 lbs.



ROCKFORD

**INCLINABLE
AND**

**STRAIGHT SIDE
PRESSES**

● Rockford Presses are sturdily built of the best materials and incorporate many features that are the result of years of experience in building presses of various types. You can depend upon a Rockford—for it is designed to maintain exact adjustment throughout long runs and under heavy duty.

Write for Catalog.

ROCKFORD IRON WORKS
ROCKFORD, ILLINOIS

Combined Involute and Tooth Spacing Checker

A complete line of gear checking equipment is offered by Michigan Tool Company, 7171 E. McNichols, Detroit, Mich. In addition to the gear speeder announced a few months ago, the line now includes a combined tooth form and tooth spacing checker, a spiral lead checker, hob contour and worm lead testing fixture. A feature of every piece of equipment is the use of a sine bar either for setting a machine or by using the bar as a cam to procure a ratio of movement between two moving parts, or to control the movement without the use of a lead screw.

The combined involute and tooth spacing checker requires no master forms or master base circle discs. It is designed for extreme rapidity of obtaining readings and is readily adapted to the taking of charts for comparison with other checking devices. The sine bar acts as a compensator for the differences between the lengths of arc on the friction disc, which originates



the machine movements on the base circle of the gear being checked. The first illustration shows a general view of the machine while the second shows a close-up for combined reading of tooth spacing and tooth form.

The friction disc is integral with the work holding spindle and imparts movement to the sine bar carriage.

(Continued on Page 54)

THE RIGHT TOOL FOR EVERY JOB



THE RIGHT TOOL at the production end of the machine is an important item in the set-up, for production is hampered unless the cutting tools are fully equal in design and quality to the fast powerful machines on which they are used.

Order from Stock—You're Sure of the Best

MATERIALS—WORKMANSHIP—DESIGN are all combined in Gairing Cutting Tools to meet the requirements of modern high speed production. The standard Gairing line is comprehensive and contains the most complete line of standard modern end cutting tools available.

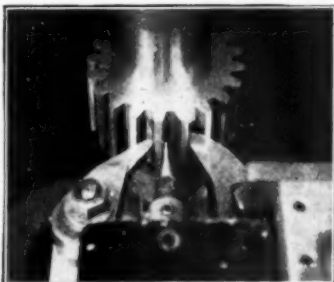
SEND FOR CATALOG of the Gairing line on your company letterhead — put your special problems up to us. A Gairing representative is near to serve you.

For Convenience, Use Quickmail Coupon No. 62.

THE GAIRING TOOL CO.

1629-35 WEST LAFALETTE • DETROIT MICHIGAN

The angular setting of the sine bar controls the movement of the indicator head, which is counter-weighted to hold it against the sine bar. The smaller the gear being checked, the smaller the angular setting of the sine bar. Each degree of work rotation may be read on a scale alongside the bar carriage. The use of two

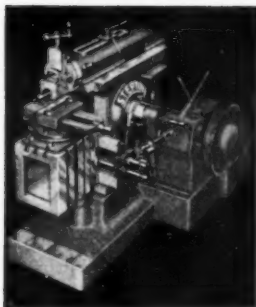


indicators and a reversible finger for tooth form makes possible the reading of tooth form on front and back faces in the same set-up. Eliminating the usual dismounting or reversing of the gear for this purpose, makes for more consistent checking. Capacity of gears which may be checked on this machine is 12" diameter by 12" in length.

Brown & Sharpe Graduate Apprentices Attend Banquet

A banquet of the graduate apprentices of the Brown & Sharpe Mfg. Co., Providence, R. I., was held on March 11th, 1937, at the Biltmore Hotel, Providence. This first general gathering was attended by about 300, almost a third of whom were located outside of the Brown & Sharpe plant; Massachusetts, Connecticut, Vermont, New York, New Jersey and Illinois being represented in addition to Rhode Island. A feature at the banquet was the distribution of a list of Brown & Sharpe apprentice graduates giving their present business connections and home addresses. A copy of this list may be obtained by former employees, or anyone interested, by writing to the Brown & Sharpe Mfg. Co.

POWERFUL MACHINES for HEAVY WORK

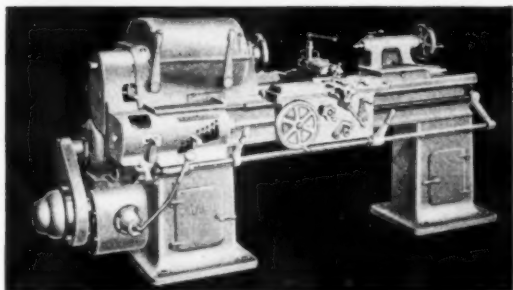


STEPTOE SHAPERS

Force feed continuous lubrication, heavy construction and Timken bearings throughout insure rigidity, accuracy and long life. Centralized controls are within easy reach of the operator at all times.

Instantaneous feed and speed changes may be made with fingertip control while the machine is running.

Send today for catalog No. 130.



CHARD Twelve-Speed All Geared Lathes

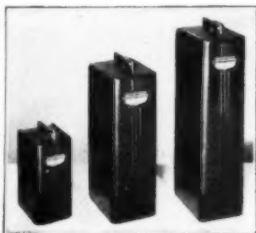
Precision Timken or plain bearing spindle—Instantaneous start or stop of spindle—12 speed changes in 15 seconds—Heat treated and hardened gears run in oil in speed box—All shafts mounted on ball bearings—Powerful, accurate, and easy control—Built in 16", 18" and 20" standard engine lathes, manufacturing lathes and tool room lathes. ● *Send today for full information.*

Western Machine Tool Works
HOLLAND, I-I I-I MICHIGAN

Cutler-Hammer Fractional Horsepower Drum Controllers

A new line of fractional horsepower drum controllers is announced by Cutler-Hammer, Inc., 318 N. 12th St., Milwaukee, Wis.

They are for use with reversible A.C. squirrel cage motors and reversing or non-reversing multi-speed squirrel cage motors, driving machine tools and similar machines where speed regulation is required. An "air-styled" removable case encloses a compact mechanism offering such features as insulated cylinder to which the segments are firmly secured without screws, non-stub-

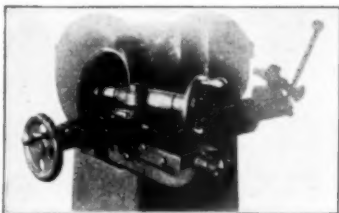


bing, renewable contact fingers mounted in individual bakelite mouldings, easily accessible for wiring, and positive action, self-indexing drum.

Roller Cutter Disc Grinding Attachment

A grinding attachment for resharpening cutter discs as used on a roller pipe cutter is being marketed by the Landis Machine Company of Waynesboro, Penna. This attachment is adapted for use on any Landis chaser grinding machine and was particularly designed for regrounding cutter discs used on the Geist roller pipe cutter.

By removing the steady rest in front of the straight wheel on the Landis chaser grinder, room is provided for bolting the disc cutter grinding attachment directly to the machine bed.



The attachment will take discs 6", 7" or

(Continued on Page 58)

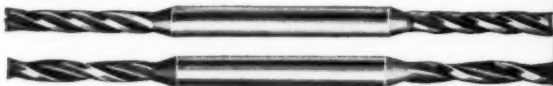
END MILLS

for All Purposes



SHEAR CUT END MILLS

The line of Progressive Shear Cut End Mills contains types and forms for practically every purpose. For economical work, accurate results and lasting satisfaction, specify Progressive End Mills for every job. Their scientific design and careful construction guarantees finer work, for constant attention is given to their manufacture to insure accurate workmanship and the best quality of materials.



Consult Our Designers on Special Problems

Our years of experience in the design and manufacture of special end mills is at your service without obligation. When you encounter a difficult problem, send your blueprints to us.

Use Quickmail Coupon No. 58 when you write for your copy of the Progressive catalog.

PROGRESSIVE TOOL & CUTTER CO.
FERNDALÉ, MICHIGAN

8" diameter. Cutter disc is mounted on the end of a cutter shaft which is adjustable in a horizontal plane for obtaining any desired bevel on the cutting edge. A hand wheel on the opposite end of the cutter shaft permits revolving the cutter disc against the face of the grinding wheel in order to uniformly grind its entire circumference. In-feed is provided by means of the hand knob at the front of the attachment and cross traverse by the hand wheel at the left of the attachment, which permits the withdrawal of the slide for mounting and removing the cutter disc.

All tables and slides are gibbed so as to provide compensation for wear. Alemite forced lubrication is used for all sliding and revolving surfaces. The illustration above shows a cutter grinding attachment applied to a Landis No. 1½ chaser grinding machine.

New Doall Contour Machine

A new model, known as the Doall Contour machine, has just been placed on the market by Continental Machine Specialties, Inc., 1301 S. Washington Ave., Minneapolis, Minn.

A dual dial control is the major improvement on this new machine tool. The most important factor in narrow band, contour sawing is the correct speed of the saw for each material and for each thickness of job. To cut high chrome, high carbon steel, the saw must travel at the rate of 50 to 75 feet per minute. To cut aluminum castings the saw must travel at the rate of 400 to 500 feet per minute. Each different thickness of work and each different material necessitates a different sawing speed. The same is true of filing or polishing when the Doall is used for those functions.



(Continued on Page 60)

MARSCHKE

Formerly Van Dorn, Black & Decker

HEAVY DUTY GRINDERS AND BUFFERS

There must be variety of types to find the right grinder or buffer for your particular kind of grinding or polishing.

You also need variety of sizes to pick the machine with sufficient weight and power for maximum work in a given time.

But whatever the type or size, the first requirement of grinders and polishers is quality—of design, materials and workmanship—to assure years of continuously uninterrupted service.

THESE ARE THREE GOOD REASONS FOR STANDARDIZING ON MARSCHKE GRINDERS and BUFFERS—formerly made by Van Dorn, Black & Decker—now being manufactured and sold by,

VONNEGUT MOULDER CORP.

1805 Madison Ave., Indianapolis, Ind.

Send QUICKMAIL COUPON No. 47 for catalog showing machines with 10" to 30" wheels and 1 to 25 H. P. motors.



A dual control dial (shown here in a close-up view) is now built into the Doall machine, being mounted on the hinged door which is a feature of the new model.

After the manner of modern radio dial selections, this dial lists 48 different materials in alphabetical order around the rim, beginning with aluminum and ending with zinc. This list includes several trade marked materials such as Monel metal, and of course, all the common metals and materials used in manufacturing.



There is one blank space to permit the listing of any special material developed in the future. In addition to dialing the correct sawing and filing speed, this ingenious control also translates the correct saw to use for each material. That is, it also shows the correct selection of saw as to "pitch", "temper" and "set" for each of the 48 materials.

Other improvements in this new machine are an improved lap grinder, a new wider adjustment in the saw guide and greater ruggedness throughout.

New B-K Filing and Lapping Machine

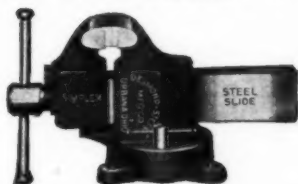
The Brickner-Kropf Machine Company, Muskegon Heights, Michigan, announce a new filing and lapping machine. Primarily designed for machine finishing of shoulder punches, it is equally efficient, it is claimed, for machine filing or lapping. Overhead construction brings work close to chuck, which helps to increase accuracy and lessen breakage of fragile tools. Table and head are both of tilting type and only one wrench is needed for all adjustments. Files already worn out in the conventional type of filing machine may be broken and the unworn ends used in this machine.

DESMOND GRINDING WHEEL DRESSERS AND CUTTERS



We manufacture the only complete line of Dressers and Cutters and will gladly advise the proper dresser for your wheels. A well dressed wheel grinds faster and more accurately at a lower cost.

SIMPLEX STEEL SLIDE VISES



The exclusive solid steel slide makes these vises stronger and more serviceable than iron slide vises at no extra cost to you.

Attach Quickmail Coupon No. 41 to your letterhead for literature on Dressers and Vises and name of your nearest dealer.

DESMOND-STEPHAN MFG. CO.
URBANA, OHIO

Atlas Announces New Lathe Manual

Just off the press is the new "Manual of Lathe Operation", published by the Atlas Press Company. It is a 272 page, metal bound book, which opens easily and lies flat. A fine reference work for both experienced hands and beginners, it illustrates and describes in easily understood language the latest technical data for machining the new metals and plastics.

The contents and make-up indicate careful planning, extensive study and research. Chapter headings: Lathe Care and Construction; Theory of Metal Cutting; Cutting Tools; Machining of Various Metals; Holding the Work; Drilling and Boring; Thread Cutting; Lathe Attachments and Their Uses; Woodturning on the Metal Lathe; Machinists Tables; Index; Pages for Shop Notes. The manual is priced at \$1.00, delivered to any point in the United States. For your copy write to Atlas Press Company, 1819 North Pitcher St., Kalamazoo, Michigan.



"Xaloy" New Wilcox-Rich Alloy

The Wilcox-Rich Division of Eaton Manufacturing Company, Detroit, Mich., announces Xaloy, an alloy that is hard enough to cut glass. It is most suitable for work where its high hardness and unusual resistance to abrasion can be used to advantage. It has a tensile strength of 43,000 lbs. per square inch and compression strength of 240,000 lbs. per square inch. Its coefficient of thermal expansion is 7.2×10^{-6} per inch per degree Fahr. and its Thermal conductivity is 7.5 B. T. U.'s per hour per square foot per degree Fahr. Its hardness is equivalent to 750 Brinell or 68 to 70 Rockwell C scale.

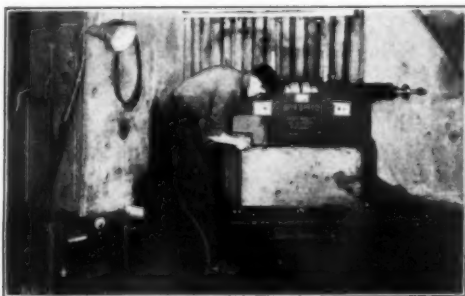
The Oliver Machinery Company, Grand Rapids, Mich., announce the appointment of the Star Machinery Company of Seattle, Wash., as their exclusive agents in the City of Seattle and the State of Washington.



*For specifications sheet and price lists
use Quickmail Coupon No. 55.*

New and Improved Sterling Speed-Bloc Sander

The Sterling Products Company, 374 Donovan Building, Detroit, Mich., announce a new and improved air driven model of their Sterling Speed-Bloc sander. This model has been developed through constant experimental work and practical application in hundreds of plants, covering over forty different industries where from one to over one hundred and fifty Sterling sanders are in use. The weight has been reduced from 7½ lbs. to 5½ lbs. and this reduction and perfected balance, plus the compact dimensions of 7" long, 4¾" high and 3¾" wide, provide a comfortable "fit" to the palm of the hand and makes the sander extremely responsive to the guidance of the operator.

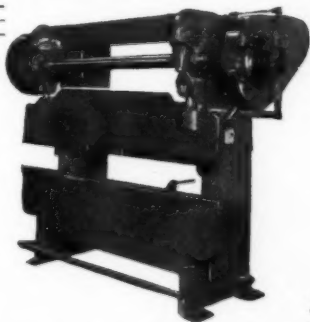


The Sterling air motor is of patented design, built to the closest tolerances practised in the machine tool industry. Machine operates efficiently on 45 to 60 lbs. of air pressure, using approximately 6 cu. ft. per minute under load. Cam, fly wheel and connecting rod are supported on double shielded ball bearings and all moving parts are made of alloy steel, hardened and ground. For wet work a water connection is provided for attaching water hose with an outlet on either side of machine, that directs a spray of water easily adjustable to the job requirement, to the surface being

(Continued on Page 66)

**JUNIOR BY NAME — BUT SENIOR IN
CAPACITY — STAMINA — PERFORMANCE**

**The Verson ALLSTEEL JR.
PRESS BRAKES**



● ARE AVAILABLE IN SIX SIZES HAVING CAPACITIES RANGING FROM 14 gauge x 52" to 14 gauge x 78" and 10 gauge x 48".

● DESIGNED ESPECIALLY FOR USE IN THE SHEET METAL INDUSTRY, AND CAPABLE OF SUSTAINED PRODUCTION, THE FOLLOWING ADVANCED FEATURES ARE INCORPORATED IN THEM

- Split type bearing construction permitting take up, and ease of dismantling.
- Heavy walled renewable bronze bushings in all bearings.
- Double plate bed construction with ample opening between the plates for slugs to fall through when punching, notching, etc.
- 5-point contact of ram on gib-ways keeping ram, housings, and bed in absolute alignment.
- Ram is adjustable from either end, individually or together.
- Internal gear tooth drive friction clutch with self-releasing brake.
- Alemite lubrication to all bearings.
- Complete "V" belt motor drive arrangement, with motor and starter is furnished as standard equipment.

● SEND FOR YOUR COPY OF BULLETIN JP-103
IT IS AVAILABLE FOR DISTRIBUTION NOW.

12017 S. Peoria St., THE ALLSTEEL PRESS CO., Chicago, Ill.

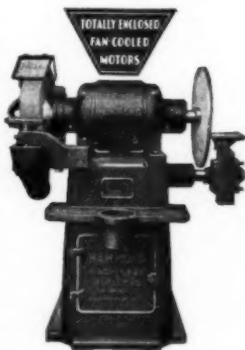
sanded. For work with naptha, benzine, etc., a special block with Sterlite base is provided, which is impervious to volatile compounds.

The principle of "Floating" as applied to construction of the bloc and pad is an exclusive feature, providing flexibility for sanding and rubbing of curved and flat surfaces. Special pads, varying in flexibility, have been developed for particular surfaces and materials. The sanding action is reciprocal, with $\frac{5}{8}$ " travel of the pad at speeds of from 1750 to 3000 complete oscillations per minute, duplicating the natural back and forth action of hand sanding. From one to five sheets of abrasives may be attached to the pad. Ordinary sized sheets are cut into three pieces without waste, each $3\frac{2}{3}$ " by 9". Descriptive literature will be sent by the Sterling Products Company upon request.

New Hammond Grinders Have Totally-Enclosed Fan-Cooled Motors

The Hammond Machinery Builders, Inc., Kalamazoo, Michigan, announce that all Hammond grinders of 3 h.p. and larger are now equipped with totally-enclosed fan-cooled motors.

It is claimed that these motors have been accepted in all industries as the best type for use where motor is exposed to dust and abrasive matter. The rotor and stator are in an enclosed chamber, sealed against the entrance of all foreign matter. Two fans force cooling air around the outside of the chamber, serving to extract heat from the motor. The manufacturers further state that this type of motor will safely withstand much greater overload with lower temperature rise than the totally-enclosed non-ventilated type. Complete description may be obtained by addressing the manufacturer.



FEDERAL Heavy Duty Open Back Inclinable **PRESSES**

"Built for Service"



No. 5 Flywheel Type
Capacity 50 Tons.

- ★ Efficient
- ★ Dependable
- ★ Accurate
- ★ Safe

All models of FEDERAL Presses are equipped with Timken bearings to increase efficiency and production at the lowest possible upkeep cost. Clutches are equipped with a positive locking device for die setting or adjustment and a device which makes it impossible for the press to repeat when momentum carries the crankshaft beyond center. This non-repeat safety feature reduces the danger of accidents to operator or dies.

Write today for information
on the **FEDERAL PRESS** line:
Use Quickmail Coupon No. 68

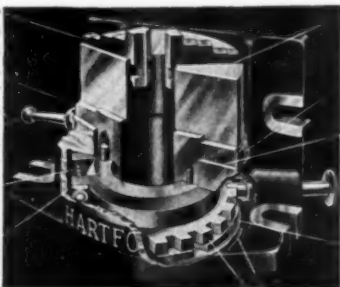
FEDERAL PRESS CO.

ELKHART, INDIANA

New Hartford "Super-Spacer"

The Hartford Special Machinery Company, 285 Homestead Ave., Hartford, Conn., announce their new "Super-Spacer", a recent development. The lack of rigidity of the standard dividing head, when chuck mounted, especially in the vertical position, is recognized by every mechanic. The advent of modern machine tool speeds and feeds created the demand for a new tool.

In operation the "Super-Spacer" holds the work in a standard chuck, universal or independent type, in either a horizontal or vertical plane. By means of a master index plate with 24 accurately spaced notches, any of the following divisions are obtained—2, 3, 4,

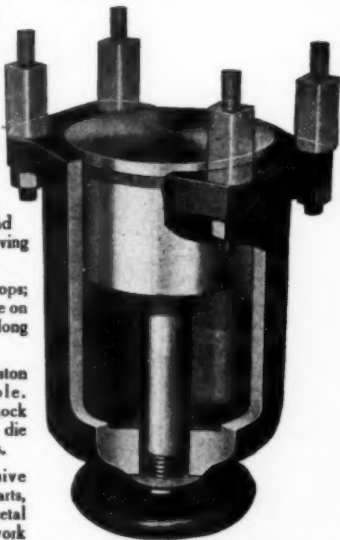


6, 8, 12, 24. It is readily and quickly changed from one set of divisions to another by means of mask plates notched with the desired number of spaces which prevent any possibility of error in indexing. This feature obviates the necessity for a skilled operator. It is impossible to engage any index notch except those left clear by the mask plate.

In the illustration a cutaway view shows the internal construction of this tool. The indexing and clamping mechanism is entirely enclosed against the entrance of chips or dirt. It is adaptable, may be used for milling, slotting, drilling, planing—for one piece or several thousand; has quick set-up, any of the three definite positions without sub-base; rapid indexing, just release clamp, pull out handle and index; hardened and ground index plate makes for accuracy; mask plates prevent any possible error; rigidity is insured by extremely powerful clamp which binds chuck plate solidly to base.

New Improved Universal Pneumatic Die Cushion

1. Self contained portable unit, quickly installed on any punch press.
2. Can be applied to advantage on dies already in use in place of springs or rubbers.
3. Eliminates costly tanks and piping, and is a considerable saving on compressed air.
4. Ideal for jobbing shops; used to an advantage on both short runs and long runs.
5. Entire area of piston always available. Adaptable to all knock out, ejector, and die pressure pad actions.
6. Eliminates excessive strain on drawn parts, assuring normal metal strength on finished work.
7. Adaptable to both shallow drawing and compound blanking and piercing work with bolster plate thickness compensators (hand wheel adjustment.)
8. Leader pin (piston stem) fully guided, die cushions rigidly mounted eliminating all piston deflection.
9. Moderately priced, accurately built, simple in design and universal in application.



Use Quickmail Coupon No. 46 when you write for Bulletin

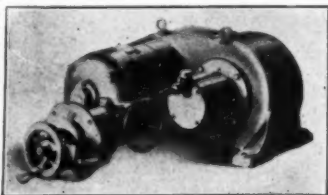
Made in seven sizes with full automatic pressure control and precision adjustment feature adaptable to a wide range of punch press operations.

DAYTON ROGERS MFG. CO., Minneapolis, Minn.

U. S. Hydraulic Remote Control

A new development in the U. S. Varidrive motor is announced by U. S. Electrical Motors, Inc., 200 East Slauson Ave., Los Angeles, Calif. This improvement consists of remote control of variable speed units by hydraulic means.

The operator can vary the speed of the compact Varidrive motor unit over a wide range of speeds by turning the hand-wheel at the remote control station. The remote control is hydraulic and pro-



vides a smooth regulation of speed and an infinite number of speeds within the speed range provided. The liquid at the remote control station cylinder is forced through copper tubing to the cylinder at the variable speed unit itself and the movement of this cylinder changes the speed.

New Models of the Master Woodworker

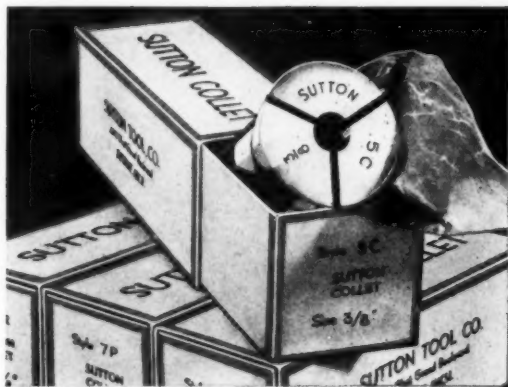
The Master Woodworker Mfg. Co., 612 Brush St., Detroit, Mich., announce greatly improved models of their Master Woodworker. They have been completely redesigned, the weight distributed properly and scientifically, while ball bearings are used throughout.

The Master Woodworker is a combination machine—really twelve machines in one. Operations it will handle are: cross-cutting, ripping, bevel ripping, gang ripping, jointing, dressing, mitering, compound mitering, dadoing, rabbeting, bevel rabbeting, routing, grooving, tenoning, boring, sanding, plowing, matching, moulding, grinding, stair routing, etc. It will also operate band saw, jig saw, lathe and shaper attachments.

Five different sizes handle all requirements from 1 in. to 6 in. All models are exactly of the same design, size and horsepower, differing to meet the capacity required. For complete details write the manufacturer at the address given above.

SUTTON COLLETS

for Lathes and Milling Machines



Spring Tempered

to give long and accurate service.

Threads Chased

to uniform size with single-point tool.

Precision Ground

inside and out on hardened arbors.

Made by the developers of Sutton DIAMOND-GRIP Collets for screw machines.

*Send Quickmail Coupon No. 59 for circular listing
SUTTON COLLETS for all makes of
lathes and milling machines.*

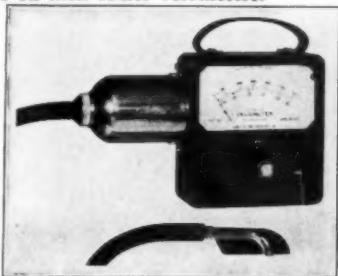
SUTTON TOOL CO.,

2836 W. Grand Boulevard
DETROIT, MICHIGAN

New Filter Attachment for Alnor Velometers

The Illinois Testing Laboratories, Inc., 150 West Austin Ave., Chicago, Ill., announce a new filter attachment for use on their Alnor velometers.

The accompanying illustration shows one of these new filters attached to an Alnor velometer which permits the instrument to be used in dust laden atmospheres, either of magnetic type dust or ordinary dust.



The instrument can be scaled for direct reading with the filter attached and a conversion chart provided when readings are desired without the filter attached. Filter attachments can be used either with or without the tube, tube fitting and jets depending upon the velocity range and the requirements. For additional information write directly to the Illinois Testing Laboratories, Inc., at the above address.

The Apex Machine & Tool Co., Dayton, Ohio, have just issued Catalog and Reference Manual No. 9 of Apex-Phillips screw driver bits for Phillips recessed head and Apex bits for slotted head screws. It includes a complete chart and information covering 125 screw driver bits for 13 of the more widely used electric air and spiral screw drivers and should interest any manufacturer who drives screws by power or with spiral screw drivers.

The Hannafin Mfg. Company, 621 S. Kolmar Ave., Chicago, Ill., have recently issued their Bulletin No. 40, illustrating and describing special hydraulic presses. All the machines described therein have been especially designed to meet certain modern production requirements and to simplify the operations required.

Chicago

AUTOMATIC RIVET SETTERS WILL HANDLE RIVETS



AS SMALL
AS THIS—

OR AS LARGE
AS THIS!

A wider range of tubular and split rivets, in all metals, the most complete line of power and manual automatic riveters, plus a competent consulting service makes "Chicago" best equipped to lick production problems. Send sample assembly with inquiry.

*Single and Multiple
Setters.*

Chicago

**RIVET AND
MACHINE CO.**

**1855 South 54th Street
(Cicero P.O.) Chicago, Ill.**



One of the World's Largest Manufacturers of Split
and Tubular Rivets and Rivet Setting Machines



Use QUICKMAIL COUPON NO. 73

It will bring you our rivet price list and illustrations of Chicago Automatic Rivet Setters. On specific production problems write letter and send sample assembly or blue print.

New Sheffield Comparator Type Gage

The Sheffield Gage Corporation, Dayton, Ohio, announces a new comparator type instrument, lower in price but retaining many features of the Sheffield visuals.

The gaging head utilizes the patented Sheffield fine adjusting sleeve for rapid, easy movement of the dial hand to the final setting. The gaging head is raised and lowered by a convenient hand wheel on the right, which provides smooth, free adjustment to the proper height above the lower anvil. Clamping wheel on the left quickly and surely locks the head at the precise height. The entire gaging head may be swiveled on the column to provide gaging from surfaces other than the self-contained anvil.

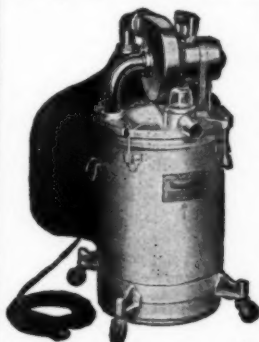


Standard make indicators are mounted on the gaging head. These may be obtained in both the one-thousandth and three-thousandth range. Either indicator may be read rapidly by experienced operators.

A rugged base carries the standard Sheffield visual gage anvil. Special anvils can be supplied for unusual requirements. The steel column carrying the gaging head is pressed into the base at the rear. The gaging spindle or upper anvil is of the same design used in Sheffield visual gages. On continuous operating tests this spindle has consistently shown no appreciable wear after more than twenty-five million consecutive gagings. This new instrument is especially recommended for those applications where the accuracy of visual gages is not required.

Catalog No. 22 has just been issued by Willey's Carbide Tool Co., 1340 W. Vernor Highway, Detroit, Mich. It illustrates and gives complete information of their line of tungsten carbide tools and tips; tungsten carbide blanks; special tipped tools made to fit your requirements; and two new additions to their line, work rest blades for centerless grinders and gages. In addition to listing sizes and prices, recommendations for grinding tungsten carbide tools and brazing are also included.

***For the First Time! Vacuum Cleaning
Made Applicable to All Plant Cleaning
Requirements at Low Cost With***



Breuer's Ball Bearing

TORNADO

**Portable Industrial
Vacuum Cleaner**

This new machine is designed to solve all industrial cleaning problems without the expense of installing a stationary plant or using so-called portable cleaners which are too heavy and expensive for average plant applications.

TREMENDOUS POWER

1 H. P. Motor—46 $\frac{1}{4}$ Waterlift

Do not confuse the TORNADO with light-duty cleaning machines. Model 112 combines light weight (only 40 pounds) with tremendous cleaning power (1 H. P. G. E. ball bearing Motor—46 $\frac{1}{4}$ " waterlift). Patented principle of separating fine dust from refuse and depositing heavy dirt in tank makes this cleaner as applicable to heavy duty work as the largest machines. Sturdy construction insures long life and low yearly cost.

Has plenty of power and capacity to handle dust, dirt, sand, sawdust, metal scraps, filings, etc. Attachments available for cleaning boiler tubes, ovens, machinery, walls, floors, pipes, etc. Motor unit can be quickly removed for blowing dust from motors, etc. The handiest heavy duty, low cost, time and labor saving unit ever built.

We prove TORNADO advantages right in your plant without obligation. Send Quickmail Coupon No. 30 for details of trial offer and further information or write.

BREUER ELECTRIC MFG. CO.
842 Blackhawk Street, Chicago, Illinois

New "High-Speed" Wide Gap Riveting Hammer

The High Speed Hammer Co., Inc., 313 Norton St., Rochester, N. Y., has recently added to its line of riveting hammers a series of wide gap machines.

These machines will accommodate exceptionally large parts such as snow shovels, blower fans, impellers and other large parts that cannot be accommodated on standard riveters. Hub bushings are readily riveted into place on fans, wheels for toy carts and similar circular parts, the radius of which is less than the gap of the riveting hammer. The machine illustrated is a No. 2-A heavy duty, wide gap machine with a throat depth of 16". The motor is mounted directly above the column instead of on a motor shelf on the rear. Drive is through a V-belt. Aside from this feature the machine is



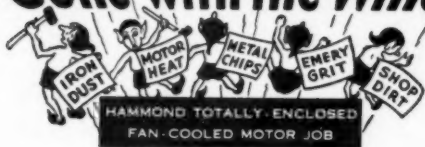
essentially the same as the standard High Speed riveting hammer construction which has a throat depth of 6".

Agnew Model J Spot Welder

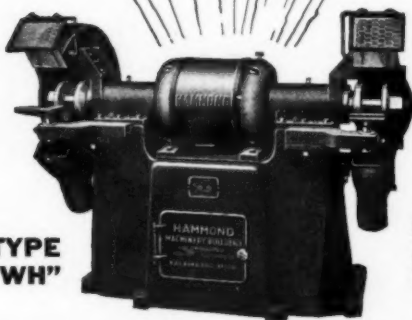
The Agnew Electric Company, Milford, Michigan, announce their new Model J foot operated spot welder, which is designed to meet the needs of those desiring a simplified type of spot welder capable of all-around work. Body is all steel, with grey iron base and top plate. Welding capacity is full 10 KVA. Two pieces, 16 ga. and thinner. Standard depth of throat is 8", but can be had up to 18" inclusive. Adjustable automatic switch, four points of heat regulation, Elkoloy water cooled electrodes are some of the other features.

The Ajax Flexible Coupling Company, Westfield, N. Y., announce the moving of their Pittsburgh sales office to 970-B Union Trust Building. Their sales representative is Mr. J. Guy Griffith and the telephone number is Atlantic 3854.

"Gone with the Wind"



**TYPE
"WH"**



**5, 7½
& 10
H. P.**

HAMMOND GRINDERS WITH TOTALLY-ENCLOSED FAN-COOLED MOTORS

Set New Standards of Electric Grinder stamina and dependability by elimination of iron dust, metal chips, emery grit and shop dirt from motor windings. Write for bulletins showing complete line grinders and polishers.

Use Quickmail Coupon No. 23

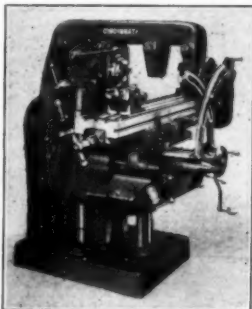
Hammond Machinery Builders
INCORPORATED
KALAMAZOO, MICHIGAN, U. S. A.

Eastern Branch: 148 West 23rd Street, New York

Cincinnati No. 2 L-Type Universal Milling Machine

A tool room miller especially designed for job shop quantities of the average type of milling machine work, is the No. 2 L-Type universal miller announced by Cincinnati Milling Machine and Cincinnati Grinders, Inc., Cincinnati, Ohio. This machine has fifteen spindle speeds ranging from 23 to 1200 revolutions per minute. All teeth of the gears in the drive to the spindle are finished after heat treatment to insure quiet operation at all speeds.

Feed rates are selected by shifting two levers on the left-hand side of the knee. Twelve feeds are available, the longitudinal travel ordinarily ranging from $\frac{3}{4}$ " to 30" per minute, but a lower feed series can be provided. The feeds can be engaged from the front or rear working position with the spindle stationary, running, or actually taking a cut. Power rapid traverse is available in six directions, the longitudinal travel being at the rate of 100" per minute. Immediately upon the release of the rapid traverse lever the motion of the unit that is being rapidly traversed is changed to a feed rate.



A 3 h.p. motor enclosed in the column drives the machine through V-belts. Motor is accessible through a hinged cover at the rear of the column. The spindle mounting consists of a double row anti-friction front bearing and an anti-friction self-compensating rear bearing. A multiple disk brake instantly stops the spindle when the starting lever is disengaged. The direction of spindle rotation can be reversed by means of a lever on the side of the column which is operated to stop, reverse and start the motor, eliminating the need of reversing gears.

● OLIVER ●

PRECISION DRILL GRINDER

Protect Your Small Drill Investment

80%

of all drills are small ($\frac{3}{8}$ " or under) so you see it pays to use an 'OLIVER' No. 21—a machine especially designed for small drill grinding—to keep them in perfect cutting condition.



The OLIVER is more than a motor-grinder-stand. It is a complete machine tool, designed and built to assure QUICK SETTING, ACCURACY, SPEED in grinding, HIGH EFFICIENCY AND UNIFORM drill points. It is being used by leaders everywhere in the manufacturing industries and with the greatest amount of success.

Let us tell you more about this SUPER machine for grinding small drills $\frac{3}{32}$ to $\frac{1}{4}$ " in diameter.

We also build the larger automatic types for drills $\frac{3}{16}$ " to $\frac{1}{2}$ ".

*Send Quickmail Coupon No. 17 for
Oliver literature—No Obligation.*

OLIVER INSTRUMENT COMPANY

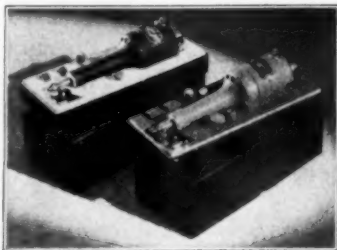
1408 E. MAUMEE ST.

ADRIAN, MICHIGAN

No. 10 Dumore Hand Grinder

The hand grinder shown in the foreground of the illustration below is the new No. 10 Dumore, manufactured by The Dumore Company, Racine, Wisc. It was originally developed for a large automobile manufacturer, but the demands for this tool were so great that it has been added to the Dumore line as a standard item.

This grinder has a 1/18 h.p. dynamically balanced Dumore motor, 3/8" collet chuck, a tested three bearing construction using selected precision grease-sealed ball bearings. The air used in cooling this tool passes through the snap-on filter cap that prevents dust and dirt from entering the tool.



The equipment included with the No. 10 consists of mounted wheels, abrasive bands and arbor, wrenches, cord, plug and toggle switch built into the case. Speed, 20,000 r.p.m.; horsepower, 1/18, which is considerable for the size of the tool; weight, 2 lbs., 12 oz.—light enough for an operator to handle all day in the production line.

Bulletin 370, recently released by the Johnson Bronze Company, New Castle, Pa., lists over 100 additional general purpose bearing sizes, making the total number of sizes now available from stock over 700. In addition to illustrating and describing the line of bearings, the bulletin also contains sections on Johnson universal cored and solid bars; hexagon bars; lead-base and tin-base babbitt and graphited bronze bearings.

Bulletin No. 320 has just been issued by the Lincoln Electric Company, Cleveland, Ohio, covering the Lincoln "Shield-Arc SAE" welder Type S-6018, 400 amperes.

SOUTH BEND UNDERNEATH BELT

Motor Driven

LATHE



Model 117-C, South Bend
Underneath Belt Motor Driven
Lathe 16" swing by 6' bed in-
cluding Equipment as shown..... **\$869**

The New South Bend back-geared screw cutting Lathes are used in leading manufacturing plants and machine shops for work requiring the highest accuracy and precision in production and tool work.

Write for general Catalog No. 96 giving details and full specifications. Sent Free Postpaid.

SOUTH BEND LATHE WORKS

877 E. Madison St., South Bend, Ind., U. S. A.

PRICES OF OTHER POPULAR SIZES



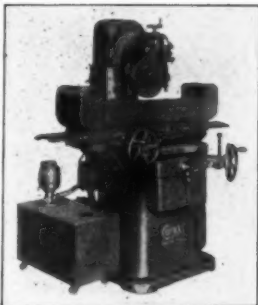
Size and Type Lathe	Between Centers	Ship'g Weight	Less C'shaft	Motor Drive
9"x3' Workshop Bench Lathe...	17"	320	\$ 85.00	\$116.00
9"x3' Junior Lathe.....	16 $\frac{3}{4}$ "	600	192.00	294.00
9"x3' Standard Change Gear.....	16 $\frac{3}{4}$ "	655	257.00	359.00
9"x3' Quick Change Gear.....	16 $\frac{3}{4}$ "	655	297.00	399.00
11"x4' Standard Change Gear.....	24"	920	339.00	487.00
11"x5' Quick Change Gear.....	36"	990	408.00	556.00
13"x4' Quick Change Gear.....	16"	1410	443.00	636.00
15"x5' Quick Change Gear.....	24 $\frac{1}{2}$ "	1460	529.00	769.00
16"x6' Quick Change Gear.....	34"	2230	626.00	869.00

SOUTH BEND Precision LATHES

Covel No. 5 Hydraulic Surface Grinder

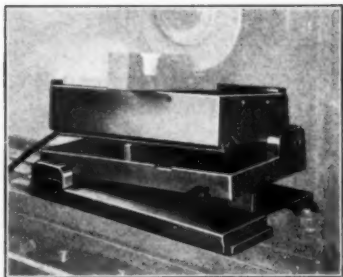
The Covel Manufacturing Company, Benton Harbor, Mich., announce a new hydraulic surface grinder to be known as the No. 5. Designed for present day production demands it has a variable longitudinal table travel capable of high speeds and permitting the use of harder, freer cutting grinding wheels.

The No. 5 has a capacity for grinding work 24" long, 8" wide, 11" high, under a 12" wheel. Table width is 9½", length 46". Longitudinal movement 26". Traverse, 8½". Table has 3 T-slots for ½" bolts. Longitudinal table travel is at rate of 10 to 90 feet per minute. Traverse table automatic, 0" to .175" per reversal of table, hand vertical feed graduated in .0005", spaced 5/32" apart. The cartridge type direct motor-driven spindle runs in



precision ball bearings and is supported by a massive head to prevent vibration. Spindle and rotor are balanced as a unit. Accurate cross-feed facilitates grinding up to a shoulder. All controls are easily reached from the operating position. Elevating handwheel is placed at the working level of the machine and at the operator's right, thus, the operator can quickly sight the surface to be ground and can look down on the graduations, reading them easily and accurately. Ball bearing throttle valve expedites changes in table speed. All wearing surfaces are protected from abrasive materials.

Footnote Bros. Gear and Machine Corporation, Chicago, Ill., announce the following changes in sales personnel: Mr. E. G. Akridge who has been handling the territory on the north side of Chicago is appointed direct factory representative in the Detroit territory, succeeding Mr. Thomas Lord, resigned. Mr. F. A. Emmons, Jr., takes over the territory vacated by Mr. Akridge and Mr. Harry Harrison has been appointed sales engineer in the central territory in Chicago.



On YOUR Grinders

The MAGNA-SINE will—

- Save hours of set-up time on jobs requiring either single or compound angles.
- Assure precision accuracy in both grinding and checking.
- Pay for itself many times over in its first year of use.

As many as six repeat orders have been received from each of a number of leading manufacturers now using the MAGNA-SINE. That's evidence of outstanding performance! If you are not thoroughly familiar with its time-saving, money-saving advantages, use *Quickmail Coupon No. 63*. It will bring you complete information.

The MAGNA-SINE

ROBBINS ENGINEERING COMPANY

639 MT. ELLIOTT AVE., DETROIT, MICHIGAN

A CLEAN BLOW
WITHOUT INJURY
TO SURFACE STRUCK



USE THE
BASA
HAMMER

WITH REMOVABLE FACES

*Send Quickmail
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for full particulars*

In finishing and assembly work it is often desirable to use a hammer that can strike more than one kind of blow.

**FASTER AND MORE SATISFACTORY
WORK MADE POSSIBLE**

MADE IN FIVE SIZES

Rawhide, Copper and Babbitt faces can be inserted in head by simply loosening nut.

Faces cannot rattle in head, or fall out— The clamping jaws of the "BASA" hammer can be set up to take care of shrinkage or wear of the faces.

GREENE, TWEED & CO.

SOLE MANUFACTURERS

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NEW YORK, N. Y.



Your New Copy is Here

Showing an exceptionally complete line of linear precision instruments. New information, new dial indicators, new model numbers, new dial gauges, are all in the new Federal Catalog.

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FOR CATALOG No. 43

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Prompt delivery from stock on over 10,900 standard items — over 6700 ACME Standard — over 4200 A. S. A. Standard — all completely finished ready for use. *Special sizes made to order.*



Made in our new plant by the most exacting and scientific methods — insuring accurate fit plus long wear — concentric within .0003" full indicator reading.

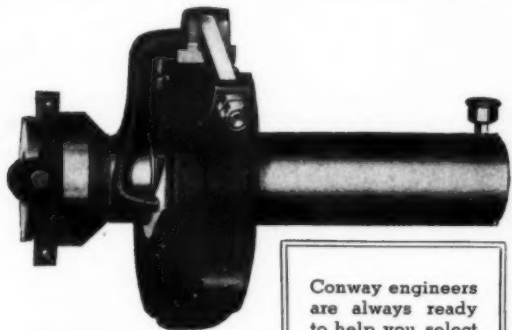


Types shown at left, top to bottom, are: plain stationary press fit, type 'P'; shouldered stationary press fit, type 'S'; removable slip, type 'R'.

Send *Quickmail Coupon No. 39* for bulletin containing complete data and low prices. Satisfactory service guaranteed.

ACME
INDUSTRIAL CO.
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Simple — Efficient — Strong



CONWAY COMPRESSION CLUTCH

Conway engineers are always ready to help you select the right clutch for your work. Use Quickmail Coupon No. 33 when you write for Bulletin No. 36.

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*Literature on the splendid Conway Disc Clutch
is available upon request.*

THE CONWAY CLUTCH CO.
1541 Queen City Ave., Cincinnati, Ohio

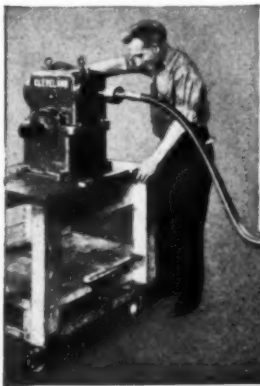
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made with a spare motor and an

S. S. WHITE FLEXIBLE SHAFT

A handy power supply unit for making running tests on gearing and other machine parts during and after assembly, can be made by mounting a spare motor on a portable stand and attaching to it an S. S. WHITE Flexible Shaft equipped with a coupling on each end for ready connection.

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S. S. WHITE shafts are available up to and including $\frac{3}{4}$ " diam., in any length. Ball-bearing couplings can be supplied with shafts up to $\frac{3}{8}$ " diam. Ask for quotations on your requirements.

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THE "HANDY MAN"

Built in
5 Sizes

Will rip, bevel, crosscut or
make the fine cuts.

12 MACHINES
IN ONE

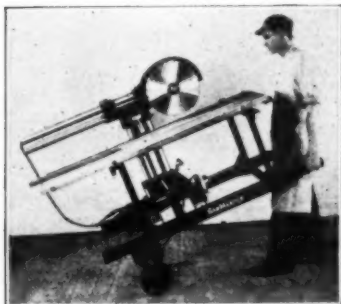
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"MASTERS"
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than 15 years with-
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than saws.

Only a "Master" will
give you this service.

Quickmail Coupon No. 60 will bring
complete catalog and prices.



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Ball Bearings
Throughout

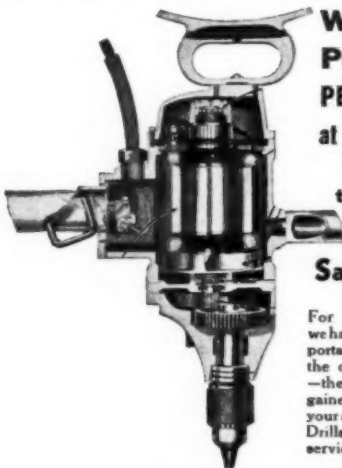


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Made in four sizes.

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**Will Give You
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PERFORMANCE
at a Low PRICE**

**That's Why
there are over**

**50,000
Satisfied Users**

For more than 27 years we have been manufacturing portable electric drills and the constant improvements—the practical experience gained—over that period is your assurance that TEMCO Drills will render satisfactory service.

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TEMCO Drills are ruggedly built to withstand the roughest usage. Norma high grade ball bearings are used to eliminate friction, with a special ball thrust bearing which removes all end friction. Power is furnished by a 25 to 60 cycle universal motor for direct and alternating current which is fan cooled and will not run hot. Deep cut, wide face, oil hardened gears will stand the hardest wear. Made in $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ " capacities. All sizes from the $\frac{3}{8}$ " up have these exclusive TEMCO features: oval aluminum handles, automatic switch and a balance on the side handle which makes the drill seem lighter than it really is and greatly reduces operator fatigue.

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The TEMCO ELECTRIC MOTOR CO.

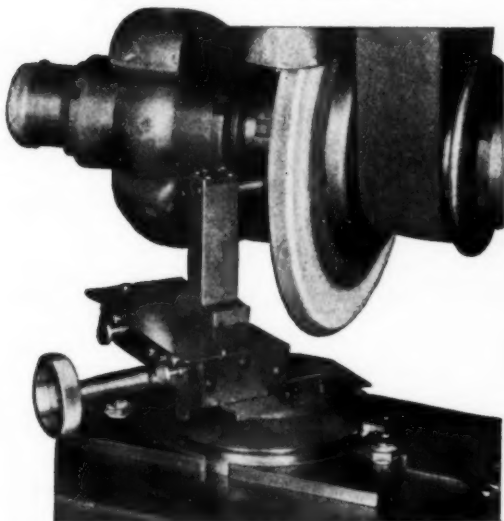
• **Leipsic, Ohio, U. S. A.** •

The Vinco Angle Tangent to Radius Dresser

for

Internal, External and Surface Grinding Machines

Patented June 5, 1934, Other Patents Pending



This shows a Brown & Sharpe External Grinder and a wheel that has been dressed with the Vinco Dresser. It is easy to dress angles and radii with this precision made tool. First, it has the patented feature of dressing angles and radii from the same axis without moving the diamond. Second, it has an index plate and vernier graduated to one ten thousandth of an inch accuracy. Third, it is made of the finest materials by the most highly skilled mechanics in the world. Fourth, it is guaranteed by a firm with fifteen years experience in designing and building precision grinding equipment. Fifth, scores of manufacturers are saving 75% in dressing costs and maintain an accuracy in their product that cannot be obtained by any other method.

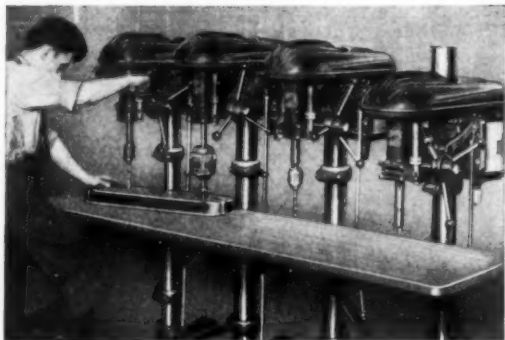
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VINCO TOOL COMPANY

7348 Central Avenue,

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BUILD YOUR OWN 4-Spindle Drill Press



Need a four spindle drill press in a hurry for a special job? And costs must be kept to the minimum? The photo shows how one shop found the answer!

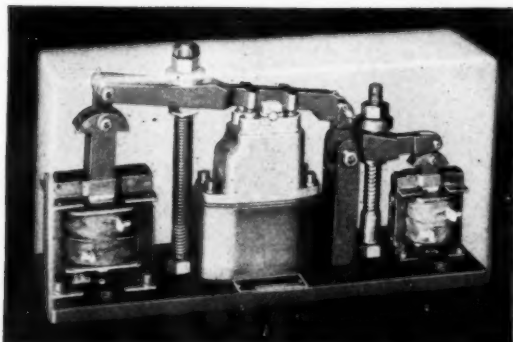
Four Delta 17" Drill Presses were set up in a row, and a special cast table screwed to the regular tables. The total cost, including $\frac{3}{4}$ H. P. motors, foot feed for each spindle and special table, was less than \$600, and the superintendent reports that the machine performs as well as any multiple-spindle drill press in the shop — some of which cost four times as much.

Send for complete story on Delta Drill presses, 11", 14" and 17" sizes, and let us show you how they can save you money in your shop.

Use Quickmail Coupon No. 29 when you write to us.

Single-spindle floor-type 17" drill press, with No. 2 M. T. spindle, ball bearing throughout. With belt and motor pulley, but less motor, \$89.50.

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ROSS Operating Valves

Model 4-P 2-SM — Solenoid Controlled

For the control of single and double acting cylinders. This type has no neutral position—locks in either position through *momentary energizing of solenoids*.

Other models for hand, foot or mechanical control. All are poppet type—valve seats seal positively—no lapping or grinding required.

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AUTOMATIC
Roll Feeds

For Every Size and Make of Punch Press

**FAST
ACCURATE
AUTOMATIC
SAFE**



Prevent Punch Press Accidents

One sudden accident may wreck a year's profits on a particular machine. Protect yourself and your operators by installing Wittek Automatic Roll Feeds. They feed automatically any stock from coils in lengths from 0" to 24" per press stroke and increase production at a saving in time, operating costs and dies. Single roll, double roll and compound type with straightener are easily installed on any make of punch press without alteration.

Wittek Reel Stands

Automatic, Self-Centering, Ball-Bearing. Adjustable to any height, balanced at any angle, 500 lb. capacity. Prompt deliveries from stock. Also made in four other models.

Write today for Bulletin "HF" giving complete details and specifications of WITTEK Automatic Roll Feeds and Reel Stands.

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WITTEK MANUFACTURING COMPANY

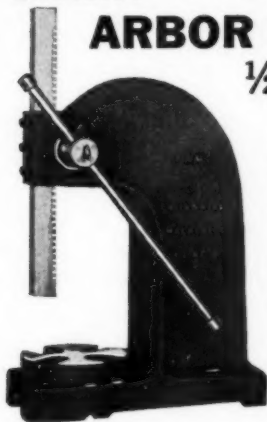
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CHICAGO, ILL.

HIGHER QUALITY FAMCO LOWER PRICES

ARBOR PRESSES

$\frac{1}{2}$ to 12 Tons



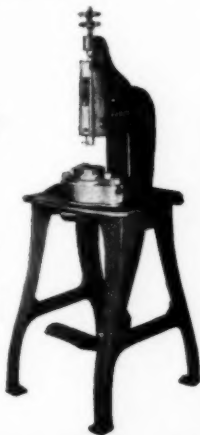
Years of experience and a thorough knowledge of requirements are embodied in Famco Arbor Presses. Made from highest quality materials by skilled workmen whose precision and attention to every minute detail assure you of a press that will give the utmost in service. With a Famco you can rely on steady, efficient operation over a long period of time, with consequent savings in operating and maintenance costs.

FOOT (KICK) PRESSES

Made in 3 sizes:

3' — 6" — 10"

Designed for a wide range of requirements, Famco Foot Presses are made to meet a high standard of quality. Sturdily constructed, they give unlimited, trouble-free service. Adjustable stroke and foot pedal assure rapid work. Furnished complete with die-block, die-holder and chuck.



AT YOUR DEALER'S

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FRIIS & MILLER MACHINE CO.

RACINE, WISCONSIN, U. S. A.



- QUIETNESS
- RELIABILITY
- MAXIMUM PERFORMANCE



CENTRIFUGAL COOLANT PUMPS

THESE UNITS CAN BE MOUNTED IN ANY POSITION

AG3M	1/4 H.P. BALL BEARING MOTOR	25 G. P. M.	10 FT. HEAD
AG4M	1/2 H.P. BALL BEARING MOTOR	35 G. P. M.	10 FT. HEAD
AG5M	1/2 H.P. BALL BEARING MOTOR	50 G. P. M.	10 FT. HEAD
AG6M	3/4 H.P. BALL BEARING MOTOR	70 G. P. M.	10 FT. HEAD

FULFLO SPECIALTIES CO., INC.
BLANCHESTER, OHIO



The MALL universal grinder. More horsepower per pound of weight in the operator's hands than any other grinder on the market!

THERE'S A *MALL* GRINDER

for Every Polishing, Grinding, Buffing and
Rotary Filing Application

"A TOOL FOR EVERY JOB"

Today countless operations that previously required tedious hand work are performed with SPEED and EASE by using MALL machines and attachments. There are light duty machines for pattern, die, and mold making, sharpening taps, dies, and other tools—heavy duty machines for polishing, grinding and buffing. Every shop will find a wide variety of uses for MALL PORTABLE POWER TOOLS.

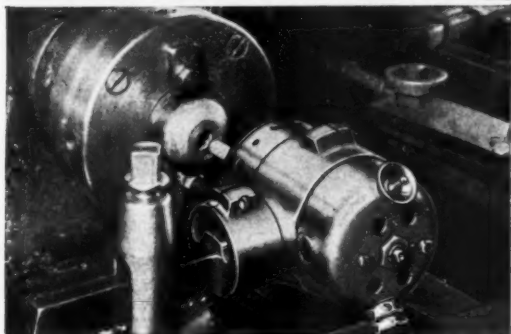
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MALL TOOL COMPANY

PORTABLE POWER TOOLS & FLEXIBLE SHAFT EQUIPMENT

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MOUNT IT ANYWHERE



To Do Many Jobs Well!

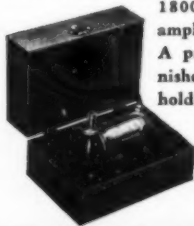
STANLEY TOOL ROOM GRINDER

Use it for inside or outside grinding, either free hand or mounted on a lathe, shaper or milling machine. Its $\frac{3}{8}$ H.P.,

18000 R.P.M. Universal motor gives it ample power to drive a $1\frac{1}{2}$ " x $\frac{1}{2}$ " wheel.

A precision tool in every respect. Furnished complete with cable, carrying case, holders, chuck and 13 accessories. Ask

your dealer for free demonstration, or write for descriptive catalog. Stanley Electric Tool Division, The Stanley Works, New Britain, Conn.



STANLEY



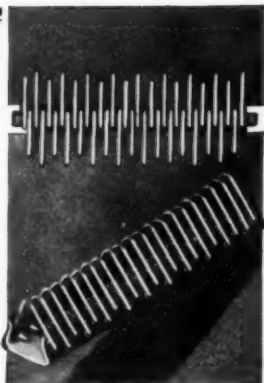
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"Cost Less Per Year"

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Lacing People"*
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DOALL CONTOUR SAWING OFFERS YOU ---

LETTERS TO DOALL

"We are using our DOALL far more than we expected. Everything about the machine is fine."

American Can Co.
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"To say that we are pleased is putting it too mild. We are elated with this new machine."

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President, C. E. Erickson
Company, Des Moines,
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TO INVESTIGATE . .

1. Ask for Application Analysis Form that helps you determine DOALL savings in your operations.
2. Send for Contour Sawing Handbook, mailed free when requested on business letterhead.

For convenience, use Quickmail Coupon No. 65



AUTOMATIC TRUE CIRCLES

To make true circles with the Contour Saw the material is revolved on a fixed pivot, turning into the saw exactly as in a lathe. No time is lost in chucking, truing up, or centering, and the unused portion is saved, instead of being reduced to chips. Contour Saws are widely used to insure automatic true circles within .002 accuracy.

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Dies and punches
All die parts—one operation
Cutting non-ferrous metals
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QUICK SHIPMENTS
Shipments are usually
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standard models.

TRUE
CIRCLES OF
ANY DIAMETER
AND UP TO
8"
THICKNESS OF
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LARGE CAPACITY



SAVES MATERIAL



FAST

CUTS
TRUE CIRCLES
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CONTINENTAL MACHINE SPECIALTIES
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MINNEAPOLIS MINNESOTA

ANY SPEED —AT YOUR FINGERTIPS—

A smooth, quiet, vibrationless, positive flow of power at the speed you desire . . . by effortless turning the speed control.



**THE NEW LENNEY
Variable Speed Transmission
is the answer to your transmission
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Territories available to agents of proved ability.

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**The LENNEY MACHINE
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WARREN

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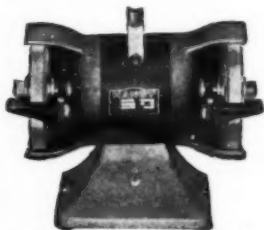
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OUR LARGEST—\$208

6 to 12-inch
Bench and Pedestal Types
**each guaranteed
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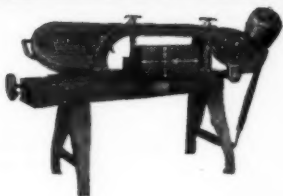
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METAL CUTTING BAND SAWS
are money savers . . . aid
maintenance . . . help in-
crease production . . . move
easily to all parts of plant . . .
have a rugged long life . . . are
versatile and accurate . . .



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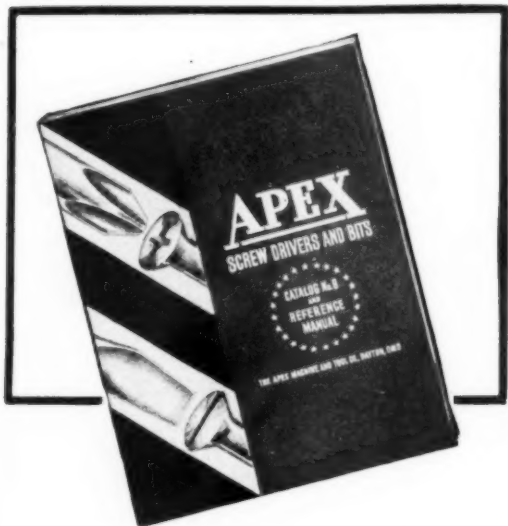
8 in. diameter
round or 8 in.
by 16 in. flat.

NO. 5 SIZE

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WELLS MFG. CORP. Three Rivers,
Michigan



THIS CATALOG

is of real importance to any user of Phillips Recessed Head or Slotted Head Screws.

Complete information on all kinds of Power and Spiral Screw driver bits to fit all makes of Electric, Air and Spiral screw drivers.

Write for your copy on your Company letterhead.

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The APEX
—MACHINE & TOOL CO. Dayton, Ohio—

ADJUSTABLE
While Running!



NEW
Absolutely Different

THE PRECISION UNIVERSAL TOOL HEAD

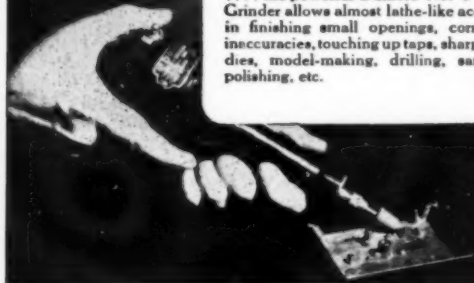
An entirely new tool that bores, faces, trepans, recesses, etc., in Milling Machine, Jig Borer, or Drill Press as easily as in a lathe. Accurately adjustable to a fraction of a thousandth **WITHOUT STOPPING EITHER TOOL OR MACHINE.** Saves 20% to 50% in actual boring time. One size takes care of every type of internal or external operation on all diameters from 1/16" to 16".

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and additional information.*

THE PRECISION TOOL COMPANY
Bridgeport, Connecticut

A *Great* LITTLE PACKAGE OF POWER

Weighing but 1 pound, 10 ounces
operating up to 15,000 r. p. m. . . . so well-
balanced it can be handled like a pencil
. . . . the powerful Dumore No. 8 Hand
Grinder allows almost lathe-like accuracy
in finishing small openings, correcting
inaccuracies, touching up taps, sharpening
dies, model-making, drilling, sanding,
polishing, etc.



Every hour of the day this grinder can be put to profitable use. There's scarcely an off-hand grinding job in any shop—large or small—but what can be touched up with greater precision and finer finish with this handy tool. A $\frac{1}{8}$ " collet chuck is regularly furnished; available are a variety of mounted wheels and abrasive bands for internal and external work; the No. 8 can be supplied with a $\frac{3}{32}$ " capacity chuck or No. 0 Jacobs chuck There's a Dumore distributor near you who will gladly demonstrate any Dumore tool without obligation.

For information, send Quickmail Coupon No. 10—today!

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Book send full in-
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Vert. Milling Mch.

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alog on Armstrong
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**ARMSTRONG
BROS. TOOL
CO.**
308 N. Francisco Av.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book, Hand-
Grinder 10-day
trial.

**CHICAGO WHEEL
& MFG. CO.**
1101 W. Monroe St.
Chicago, Ill.

7

Stick coupon on a postcard or letterhead and sign name, title and firm. It will bring a bulletin on Chicago Press Brakes.

**DREIS & KRUMP
MFG. CO.**

1

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Vert. Milling Mch.

HARDINGE BROS., Inc.

8

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Power Drills.

BUFFALO FORGE CO.

2

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Hardinge Collets.

HARDINGE BROS., Inc.

9

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Comparators.

**JONES & LAMSON
MACHINE CO.**

4

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Collets and Feed Fingers.

**MORRISON MCH.
PRODUCTS**

10

Stick coupon on letterhead or postcard and sign name, title and firm for information on Dumore Grinders.

THE DUMORE CO.

3

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Cullman Sprockets.

CULLMAN WHEEL CO

11

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on DeLuxe Handee Grinders.

**CHICAGO WHEEL
& MFG. CO.**

5

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Marvel Hacksaws.

**ARMSTRONG-BLUM
MFG. CO.**

12

Stick coupon on letterhead or postcard and sign name, title and firm for Handee Grinder on 10 day trial.

**CHICAGO WHEEL
& MFG. CO.**

6

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Armstrong Eros. Tools.

**ARMSTRONG BROS.
TOOL CO.**

19

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on the complete Wyco line.

WYZENBEEK & STAFF

20

Stick coupon on letterhead or postcard and sign name, title and firm for your bulletin on Nopak Valves.

**GALLAND-HENNING
MFG. CO.**

21

Stick coupon on letterhead or postcard and sign name, title and firm for booklet on Haskins Tappers.

R. G. HASKINS CO.

22

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog of Flexible Shaft Tools.

R. G. HASKINS CO.

23

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Grinders & Polishers.

**HAMMOND
MACHINERY
BUILDERS**

24

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Rivet Collets & Chucks.

**RIVETT LATHE &
GRINDER, Inc.**

13

Stick coupon on letterhead or postcard and sign name, title and firm on Ekland Milling Attachment.

**UNIVERSAL HIGH
SPEED TOOL CO.**

14

Stick coupon on letterhead or postcard and sign name, title and firm for circular on The Rivitor.

**TOMKINS-JOHNSON
CO.**

15

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Sheldon Tools.

**SHELDON
MACHINE CO.**

16

Stick coupon on letterhead or postcard and sign name, title and firm for information on Slow-Speed Drills.

SKILSAW, INC.

17

Stick coupon on letterhead or postcard and sign name, title and firm for full information on Drill Grinders.

**OLIVER
INSTRUMENT CO.**

18

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on B. B. Grinders.

BALDOR ELEC. CO.

Per your ad in Apr.
Hitchcock's Blue
Book send full in-
formation on Ekling
Milling Attachment.

**UNIVERSAL
HIGH SPEED
TOOL CO.**
549 Washington
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send full in-
formation on Ekling
Milling Attachment.

**WYZENBEEK
& STAFF**
642 Washington Bl.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book and circular
on The Revolver.

**TOMKINS-
JOHNSON CO.**
Jackson, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book send me your
bulletin on Napak
Valves.

**GALLAND-
HENNING
MFG. CO.**
2753 S. 31st St.
Milwaukee, Wis.

Per your ad in Apr.
Hitchcock's Blue
Book catalog
on Sheldon Tools.

**SHELDON
MACHINE CO.**
3255 Cottage
Grove Ave.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send me
bulletin on Haskins Tap-
sets.

**R. G. HASKINS
CO.**
4654 W. Fulton St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send infor-
mation on Power-Speed
Drills.

SKILSAW, Inc.
3304 Elston Ave.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send me
bulletin on Flexible
Shaft Tools.

**R. G. HASKINS
CO.**
4654 W. Fulton St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send full in-
formation on Drill
Grinders.

**OLIVER
INSTRUMENT
CO.**
1408 Maumee St.
Adrian, Michigan

Per your ad in Apr.
Hitchcock's Blue
Book send me cat-
alog on Grinders &
Poll-shers.

**HAMMOND
MACHINERY
BUILDERS**
Kalamazoo, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book send bulletin
on R. Grinders.

**BALDOR
ELECTRIC CO.**
4368 Duncan Ave.
St. Louis, Mo.

Per your ad in Apr.
Hitchcock's Blue
Book send bulletin
on R. Grinders &
Poll-shers.

**RIVETT LATHE
& GRINDER, Inc.**
Brighton
Boston, Mass.

**WITTEK
MFG. CO.**
4305-9 W. 27th Pl.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send me infor-
mation on Wittek Roll
Feeds and Stand-
ing Blue Bars.

**WELLS MFG.
CORP.**
315 Seventh Ave.
Three Rivers, Mich.

**N. A. STRAND
& CO.**
5001 N. Lincoln St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send me cat-
alog of V-12 Oper-
ating Valves.

**ROSS
OPERATING
VALVE CO.**
6484 Epworth Blvd.
Detroit, Mich.

**ROTOR AIR
TOOL CO.**
Cleveland, Ohio

Per your ad in Apr.
Hitchcock's Blue
Book, send bulletin
36 to my address.

**CONWAY
CLUTCH CO.**
1541 Queen City Ave.
Cincinnati, O.

**MODERN
COLLET &
MACHINE CO.**
403 Salliotte St.
Ecorse, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book send me cat-
alog on 4" BASA
grinding attach-
ment.

**ATLAS
PRESS CO.**
250 N. Pitcher St.
Kalamazoo, Mich.

DELTA MFG. CO.
628 E. Vienna Ave.
Milwaukee, Wis.

Per your ad in Apr.
Hitchcock's Blue
Book send me in-
formation on BASA
Hammer.

**GREENE-TWEED
& CO.**
109 Duane St.
New York, N. Y.

**BREUER
ELECTRIC
MFG. CO.**
842 Blackhawk St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book send Catalog
on the L.W. Line

L-W CHUCK CO.
Toledo, Ohio

Per your ad in Apr.
Hitchcock's Blue
Book send me infor-
mation on Wittek Roll
Feeds and Stand-
ing Blue Bars.

Per your ad in Apr.
Hitchcock's Blue
Book send me your
catalog Flexible
Shaft Machines.

Per your ad in Apr.
Hitchcock's Blue
Book send me cat-
alog Facts for
Tools.

Per your ad in Apr.
Hitchcock's Blue
Book send me cat-
alog on "Modern"
Products.

Per your ad in Apr.
Hitchcock's Blue
Book send catalog
on Delta Drills.

Per your ad in Apr.
Hitchcock's Blue
Book send infor-
mation on Ter-
nado Cleaners.

Foreign Countries—Louis Galter.

31

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Metal Cutting Band Saws.

WELLS MFG. CORP.

25

Stick coupon on letterhead or postcard and sign name, title and firm for information on Wittek Roll Feeds.

WITTEK MFG. CO.

32

Stick coupon on letterhead or postcard and sign name, title and firm for catalog of Ross Operating Valves.

ROSS OPERATING
VALVE CO.

26

Stick coupon on letterhead or postcard and sign name, title and firm for your catalog on Flexible Shaft Machines.

N. A. STRAND & CO.

33

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin 36.

CONWAY
CLUTCH CO.

27

Stick coupon on letterhead or postcard and sign name, title and firm for book on Facts on Rotor Tools.

ROTOR AIR TOOL CO.

34

Stick coupon on letterhead or postcard and sign name, title and firm for catalog of Atlas Drill Grinding Attachment.

ATLAS PRESS CO.

28

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on "Modern" Products.

MODERN COLLET &
MACHINE CO.

35

Stick coupon on letterhead or postcard and sign name, title and firm for full information on PASA Hammers, & Reversible Ratchet Wrench.

GREENE-TWEED
& CO.

29

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Delta Drills.

DELTA MFG. CO.

36

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on the L. W. Line.

L-W CHUCK CO.

30

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tornado Cleaner.

BREUER ELECTRIC
MFG. CO.

43

Stick coupon on letterhead or postcard and sign name, title and firm for information on Grob Die Making Machines.

GROB BROTHERS

37

Stick coupon on letterhead or postcard and sign name, title and firm for full information on Weldon End Mills.

WELDON TOOL CO.

44

Stick coupon on letterhead or postcard and sign name, title and firm for literature on Heuser Drill Jigs.

HEUSER MFG. CO.

38

Stick coupon on letterhead or postcard and sign name, title and firm for catalog No. 10 on Belt Lacing.

**ARMSTRONG-BRAY
& CO.**

45

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Foot & Arbor Presses.

**FRIIS & MILLER
MCH. CO.**

39

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Drill Jig Bushings.

**ACME
INDUSTRIAL CO.**

46

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Univ. Pneumatic Die Cushions.

**DAYTON ROGERS
MFG. CO.**

40

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Scully-Jones Tools.

SCULLY-JONES & CO.

47

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Marschke Grinders.

**VONNEGUT
MOULDER CORP.**

41

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on Wheel Dressers and Vices.

**DESMOND-STEPHAN
MFG. CO.**

48

Stick coupon on letterhead or postcard and sign name, title and firm for circular on Vinco Angle Dressers.

VINCO TOOL CO.

42

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on the Whitney line of tools.

**WHITNEY METAL
TOOL CO.**

Per your ad in Apr.
Hitchcock's Blue
Book sent me full in-
formation on Wel-
don End Mill.

**WELDON
TOOL CO.**
321 Frankfort Ave.
Cleveland, O.

Per your ad in Apr.
Hitchcock's Blue
Book sent me infor-
mation on Grob Die
Making Machines.

**GROB
BROTHERS**
Grafton, Wis.

Per your ad in Apr.
Hitchcock's Blue
Book sent me cat-
alog No. 1 on Belt
Lacing.

**ARMSTRONG
BRAY & CO.**
315 N. Sheldon
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book sent me litera-
ture on Heuser Drill
Jigs.

**HEUSER
MFG. CO.**
1638 N. Paulina St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book sent me bul-
letin on Drill Jig
Bushings.

**ACME
INDUSTRIAL
CO.**
210 N. Laflin St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book sent me cat-
alog on Lat and
Arbor Presses.

**FRIIS & MILLER
MACHINE CO.**
Racine, Wis.

Per your ad in Apr.
Hitchcock's Blue
Book sent me catalog
No. 10 on Scully-
Jones Tools.

**SCULLY-JONES
& CO.**
1905 S. Rockwell St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book sent me bulletin
on Univ. Die
Cushions.

**DAYTON
ROGERS
MFG. CO.**
Minneapolis, Minn.

Per your ad in Apr.
Hitchcock's Blue
Book sent me a
catalog of Desmond
Dressers.

**DESMOND-
STEPHAN
MFG. CO.**
Urbana, Ohio

Per your ad in Apr.
Hitchcock's Blue
Book sent me cat-
alog on Marschke
Grinders.

**VONNEGUT
MOULDER
CORP.**
1805 Madison Ave.
Indianapolis, Ind.

Per your ad in Apr.
Hitchcock's Blue
Book sent me cat-
alog on Whitney
line tools.

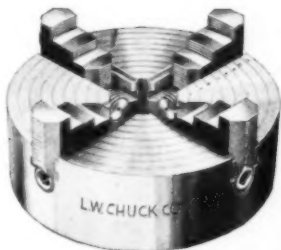
**WHITNEY
METAL TOOL
CO.**
Rockford, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book sent me cir-
cular on Angle
Dressers.

**VINCO
TOOL CO.**
7348 Central Ave.
Detroit, Mich.

SUPER Values that are OUTSTANDING 4-Jaw Independent Lathe Chucks

MADE IN 3 SIZES



Semi-steel construction with heavily ribbed body to withstand unusual strains. Ground finish. Four independent jaws made of accurately ground and fitted hardened steel. Reversible. Has 1 1/4" tough nickel steel screws. 12" size, weight 75 lbs.

Every L-W Chuck made of the best material and workmanship, guaranteed to give satisfactory service.

14" independent chuck \$38.00

12" independent chuck 33.50

10" independent chuck 29.00



Working Surface 5 3/4" wide, 13" long. Consumes .5 Amp.

L-W MAGNETIC CHUCK

Waterproof for wet or dry grinding
A REAL MAGNETIC CHUCK that is adaptable for any purpose. Unconditionally guaranteed to furnish the highest magnetic holding power on either 110 or 220 volt direct current. Well designed and beautifully finished, highest quality workmanship throughout—complete with cord and plug—an outstanding value \$45



Demagnetizing Switch for
L-W Magnetic Chuck \$8.75

Also made in the following sizes:

6 1/2" x 18" — \$60 8" x 24" — \$120 10 3/4" x 37" — \$195

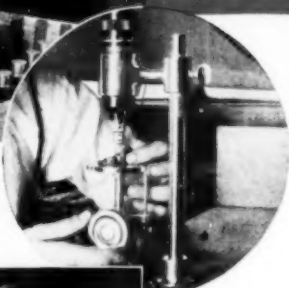
Send Quickmail Coupon No. 36 for a complete catalog on chucks, demagnetizers and dividing heads.

L-W CHUCK CO., TOLEDO, OHIO

HANDY



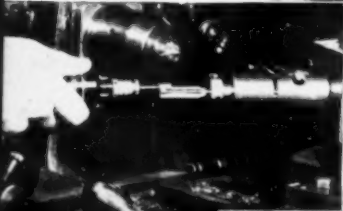
The De Luxe Handee pays for itself many times over, often on one job.



The most valuable actually a work one. More than able.

Indispensable for experimental and production line.

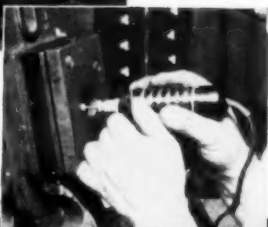
For making metal production material precision jobs places on it without removing machine.



Reaches those hard-to-get-at places. Its light weight and ease of handling in any position save time on a wide range of operations.

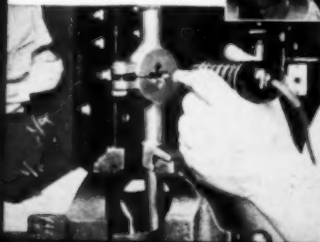
The finest, fastest tool for its ounces. Space portable; simple socket. 110 v.

Indispensable in die shops and all metal working plants for touching up and polishing every type of die, even when set on presses.



Try a Handy, its smooth, response and it will do.

Order one of



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TOOL OF 1001 USES

most versatile tool ever offered—
ally a whole shop full of tools in
More than 200 accessories avail-

spensible in model and tool room,
periment laboratory, on the pro-
tion line in large and small plants.

making, shaping, polishing all
al products, alloys, glass, composi-
materials, wood, stone, etc. For
vision jobs and hard-to-get-at
es on intricate machine parts,
out removing parts or dismantling
hine.

finest, fastest and most powerful
for its type and weight, 12
ces. Speed, 25,000 r.p.m. It is
able; simply plug in any electric
et. 110 volts, AC or DC.

a Hand— you'll be amazed at
smooth, rapid, almost human re-
se and the wide range of work
ll do.

er one today on 10-Days Trial.

- Grinds
- Drills
- Saws
- Routs
- Sands
- Carves
- Polishes
- Engraves
- Sharpens
- Cuts
- Cleans



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Quickmail Coupon No. 12

CHICAGO WHEEL AND MFG. CO.

1101 W. Monroe St., Dept. DE, Chicago, Ill.

Do Luma
Model

\$185

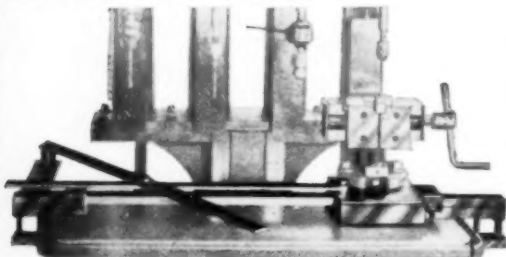
postpaid
& Accessories

SPLIT SECOND JIG ALIGNMENT

..... on your Multiple Spindle Drill-Press is assured with a "JOHN'S" DRILL JIG mounted on a HAND LEVER CONTROLLED CARRIAGE.

Just a slight movement of the Hand Lever is all that is necessary to quickly slide the Jig from one spindle to the other.

PERFECT ALIGNMENT is always assured and your Drilling, Tapping or Reaming costs are reduced to a minimum.



Above illustration shows the 8" Jig mounted on the Hand Lever Controlled Carriage

Increase PRODUCTION on your drilling and tapping operations up to 75% with these two devices. Save the time and expense of making costly drill jigs or clamping devices for each drilling and tapping job, not to mention the time lost in chucking a piece-part for each operation.

EASY TO INSTALL — OUTLASTS THE AVERAGE DRILL PRESS

Quickmail Coupon No. 44 will bring Literature.

HEUSER MANUFACTURING CO.
1638 N. Paulina St. — Chicago, Ill.

**ETTCO
TOOL CO.**

598 Johnson Ave.
Brooklyn, N. Y.

**COLONIAL
BUSHINGS, Inc.**
Detroit, Mich.

**TEMCO ELEC.
MOTOR CO.**
Leipsic, Ohio

**SUPER
TOOL CO.**
356 E. Congress St.
Detroit, Mich.

**HOBART
BROTHERS**
Box TB-47
Troy, Ohio

**SIEWEK
TOOL CO.**
Ferndale, Mich.

**VICTOR MCHY.
EXCHANGE, Inc.**
251 Centre St.
New York, N. Y.

**PROGRESSIVE
TOOL &
CUTTER CO.**
Ferndale, Mich.

**PIER
EQUIPMENT
MFG. CO.**
618 Cross St.
Benton Harbor, Mich.

**SUTTON
TOOL CO.**
2836 W. Grand Bl.
Detroit, Mich.

**FEDERAL
PRODUCTS
CORP.**
1144 Eddy St.
Providence, R. I.

**MASTER
WOODWORKER
MFG. CO.**
612 Brush St.
Detroit, Mich.

85

Stick coupon on letterhead or postcard and sign name, title and firm for information and prices on Colonial Bushings.

**COLONIAL
BUSHINGS, INC.**

40

Stick coupon on letterhead or postcard and sign name, title and firm for information on High Speed Tappers.

ETTCO TOOL CO.

56

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Teco Tools and Blanks.

SUPER TOOL CO.

50

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on Electric Drills.

**TEMCO ELECTRIC
MOTOR CO.**

57

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Siewek Drill Jigs.

SIEWEK TOOL CO.

51

Stick coupon on letterhead or postcard and sign name, title and firm for information on your new Arc Welder.

HOBART BROTHERS

58

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Progressive End Mills.

**PROGRESSIVE TOOL
& CUTTER CO.**

52

Stick coupon on letterhead or postcard and sign name, title and firm for your General Catalog.

**VICTOR MACHINERY
EXCHANGE, Inc.**

59

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Diamond-Grip Collets.

SUTTON TOOL CO.

53

Stick coupon on letterhead or postcard and sign name, title and firm for information on Ace Welders.

**PIER EQUIPMENT
MFG. CO.**

60

Stick coupon on letterhead or postcard and sign name, title and firm for information on Master Woodworking Saws.

**MASTER WOOD-
WORKER MFG. CO.**

54

Stick coupon on letterhead or postcard and sign name, title and firm for your new Catalog No. 43 on Dial Indicators.

**FEDERAL
PRODUCTS CORP.**

67

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Putnam End Mills, etc

PUTNAM TOOL CO.

68

Stick coupon on letterhead or postcard and sign name, title and firm for full information on Federal Presses.

FEDERAL PRESS CO.

69

Stick coupon on letterhead or postcard and sign name, title and firm for information on Dieing Machines.

**HENRY & WRIGHT
MFG. CO.**

70

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Transmissions.

**LENNEY MACHINE &
MFG. CO.**

71

Stick coupon on letterhead or postcard and sign name, title and firm for full information on Universal Vises.

**ODIN UNIVERSAL
CORP.**

72

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on High Speed Surface Grinders.

**GALLMEYER &
LIVINGSTON CO.**

61

Stick coupon on letterhead or postcard and sign name, title and firm for catalog No. 9 and Reference Manual.

**THE APEX MACHINE
& TOOL CO.**

62

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on End-cutting Tools.

**THE GAIRING
TOOL CO.**

63

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Magna-Sine.

**ROBBINS
ENGINEERING CO.**

64

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on the Willey's line of Carbide Tools.

**WILLEY'S CARBIDE
TOOL CO.**

65

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Do-All Machines.

**CONTINENTAL MCH.
SPECIALTIES**

66

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Kellersflex Machines.

**PRATT & WHITNEY
DIVISION**

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**APEX MACHINE
& TOOL CO.**
Third and Madison Sts.
Dayton, Ohio

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**PUTNAM
TOOL CO.**
2981 Charlevoix Av.
Detroit, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**THE GAIRING
TOOL CO.**
1629-35 W. Lafayette
Detroit, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**FEDERAL
PRESS CO.**
Elkhart, Ind.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**ROBBINS
ENG. CO.**
639 Mt. Elliott
Detroit, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**HENRY &
WRIGHT MFG.
CO.**
Hartford, Conn.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**WILLEY'S
CARBIDE
TOOL CO.**
1340 W. Vernor
Detroit, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**LENNEY
MACHINE &
MFG. CO.**
Warren, Ohio

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**CONTINENTAL
MACHINE
SPECIALTIES**
1301 Washington Ave.,
So.
Minneapolis, Minn.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**ODIN
UNIVERSAL
CORP.**
110 S. Dearborn St.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**PRATT &
WHITNEY
DIVISION**
Hartford, Conn.

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

**GALLMEYER &
LIVINGSTON CO.**
305 Straight Ave.
Grand Rapids, Mich.

Patent Pending in U.S. and Foreign

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

CHICAGO RIVET

Per your ad in Apr.
Hitchcock's Blue
Book sent along
No. 9 and reference
Manual

74

Stick this coupon on your letterhead and sign. If you wish only one catalog, cross out either valves or mandrels.

W. H. NICHOLSON

73

Stick this coupon on a postcard or letterhead and mail to receive a rivet price list and illustrations of Chicago auto, rivet setters.

CHICAGO RIVET & MACHINE CO.

76

Stick this coupon on a postcard and sign name, title and firm name to get catalog on Mall Power Tools.

MALL TOOL CO.

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CHICAGO TOOL & ENG. CO.

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HANNA ENGINEERING WORKS

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Per your ad in Apr.
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Book, send me your
industry rivet price
list.

**CHICAGO RIVET
& MACHINE CO.**
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Cicero P. O.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book, send
catalog of mandrels
—valve (Cross Out
One).

**W. H. NICHOLSON
& CO.**
Wilkes-Barre, Pa.

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Book, send bulletin
on the Head.

**PRECISION
TOOL CO.**
Bridgeport, Conn.

Per your ad in Apr.
Hitchcock's Blue
Book, send catalog
on M Power
Tools.

MALL TOOL CO.
7742 S. Chicago Av.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book, send data on
Hanna's Connectors.

**HANNA ENG.
WORKS**
1763 Elston Ave.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book, send bulletin
on your Apr. Vice.

**CHICAGO TOOL &
ENGINEER'G CO.**
8382 S. Chicago Ave.
Chicago, Ill.

Per your ad in Apr.
Hitchcock's Blue
Book, send data on
Cutting Ma-
chines.

**MODERN MACH.
TOOL CO.**
Jackson, Mich.

Per your ad in Apr.
Hitchcock's Blue
Book, send me
Clutch Log No.

**CARLYLE
JOHNSON
MACHINE CO.**
Manchester, Conn.

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name and title, and to sign your
firm name and address as well as your
own name when using the coupon on
a postcard.

DRILLING MACHINES

14"-20"-21"—Stationary Head

24"-28"-32"-36"—Sliding Head

Simple • Powerful •
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Thousands of these machines were formerly manufactured by the Rockford Machine Tool Co. of Rockford, Illinois, and have been giving universal satisfaction wherever installed. Has eight speed spindle with quick advance and return; positive feeds are instantly available while machine is in operation.

Builders of
**DRILLING
EQUIPMENT**
for over
20 YEARS

We also manufacture the Cleere-
man Automatically Oiled, Anti-
Friction, High
Speed Drilling,
Boring and Tap-
ping Machines;
Gang Drills and
Special Drilling
Machinery.

*Write for
Complete Details*



These machines are made for both belt or direct motor drive.

CLEEREMAN MACHINE TOOL CO.
GREEN BAY, WISCONSIN

(Formerly Green Bay Barker Machine Tool Works)

HANDIEST VISE YOU EVER USED



ANGLE VISE

NO. 000

with hardened
and ground
steel jaws
grooved for
holding round
pieces

\$9.75

MODEL 000

2½" JAW

DEPTH 1½"

LENGTH 8"

WT. 10 lbs.

**ACCURATELY GRADUATED--
HEAVY DUTY SIZES--4"-6"-8"**

**ALL SIZES CAN BE FURNISHED WITH OR
WITHOUT SWIVEL BASES.**

**CARRIED IN STOCK BY ALL LEADING
MILL SUPPLY HOUSES.**

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USE QUICKMAIL COUPON No. 78

**CHICAGO TOOL & ENG. CO., 8382 So. Chicago Av.
CHICAGO, ILL.**

WYCA

FLEXIBLE SHAFT EQUIPMENT



Serviceable
For Grinding,
Polishing,
Drilling,
Filing, etc.

WYCA

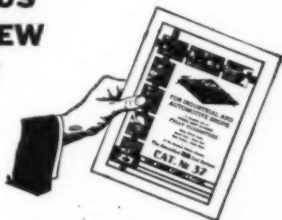
FLEXIBLE SHAFTS

Range in size from
 $\frac{1}{4}$ H. P. to 1 H. P.
Heavy Duty Single
and Multiple Speed
Machines.

PRICES FROM
\$25.00 to \$165.00

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OR WRITE US
FOR THE NEW
CATALOG No.37**

**USE QUICKMAIL
COUPON NO. 19**



WYZENBEEK & STAFF, Inc.

642 WASHINGTON BLVD. CHICAGO, ILL.

GRIND DRILLS

*Quicker
Truer*

Atlas

**DRILL GRINDING
ATTACHMENT**

\$21.75



TWO MINUTES—that's all it takes to grind $\frac{3}{32}$ " to $\frac{1}{2}$ " drills on this Atlas Drill Grinding Attachment. Grinds both lips the same with proper lip clearance. Easily adaptable to any grinding wheel. Swivel base allows wide range. Send QUICKMAIL COUPON No. 34 for complete information about this quality attachment. Sold on money back guarantee of satisfaction.

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450 N. Pitcher St.,

Kalamazoo, Mich.

Factory Displays at:

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35 E. Wacker at Wabash

NEW YORK
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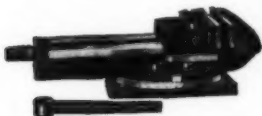
PHILADELPHIA
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ARBOR PRESSES and VISES



Arbor Presses
12 Sizes
From $\frac{3}{4}$ to 10 ton
Pressure



Shaper Vises
2 Sizes
12 and 14 inch Jaws



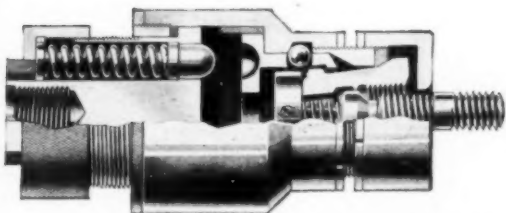
**Plain and Swivel
Milling Machine Vises**
4 Sizes
 $3\frac{1}{2}$ to $8\frac{1}{2}$ inch Jaws



Drill Press Vises
3 Sizes
 $4\frac{1}{2}$ - $6\frac{1}{2}$ and 9 inch Jaws

*Use Quickmail Coupon
No. 15 for Catalog and
Price List*

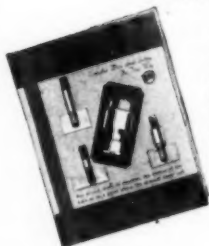
SHELDON MACHINE CO.
3257 Cottage Grove Ave., Chicago, Ill.



TITAN STUD SETTER

Sets Studs to a Uniform Degree of Tightness without Strained or Mutilated Threads

The Titan Stud Setter is a new controlled drive type for driving stud bolts, being full automatic in loading and releasing. It is a power-driven unit adaptable to all types of drill presses, air or electric tools, both portable and stationary. Operates at high or low speeds. Positive in driving and automatic in releasing. Studs may be set to any predetermined degree of tightness.



The possibilities of increased production with this tool, due to its capacity, speed range and service, plus the added economy that its safety features assure by automatic operation—all contribute toward making it a tool worthy of investigation and profitable to use.

Write for Illustrated Circular

**TITAN
TOOL
COMPANY**



**FAIRVIEW,
PENNA.,
U. S. A.**

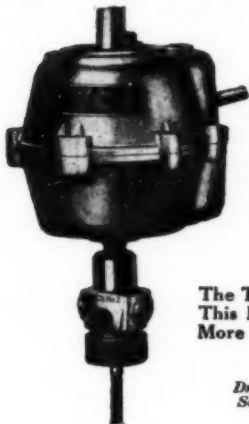
THE ONLY TAPPER WITH A LEATHER CLUTCH

Ettco - Emrick

TAPPING ATTACHMENTS

ETTCO pioneered sensitive tapping 15 years ago with a leather lined friction driving clutch.

As yet we have found no substitute to equal the smooth, consistent super-sensitive action of leather for the exacting requirements of tapping.



The 1937 clutches have about double the "pull" and wear. Taking the Tapper apart and changing clutches is now a matter of a few minutes.

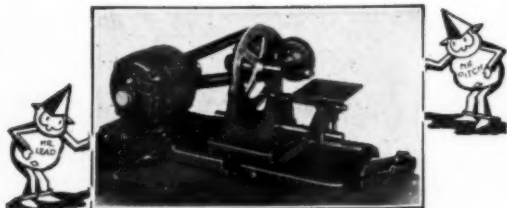
The Tappers have ball bearing spindles — needle bearing intermediate gears and all helical gears to insure the greatest possible speed.

**The Tap Idles "In"—Not Reverse—
This Means Better Holes and Far
More Tap Life.**

*Drop us a line for our catalogue.
Send Quickmail Coupon No. 49*

These tappers are used with the ETTCO *multiple tapping system* and our No. 71 *gravity foot operated tapping machine*.

ETTCO TOOL CO.
594 JOHNSON AVE. BROOKLYN, N. Y.



Push to Tap—Pull to Reverse

R & S Friction Drive Tappers are built in sizes from $\frac{3}{16}$ " to $\frac{3}{8}$ " for motor or belt drive, for bench or floor mounting, for horizontal or vertical tapping. It is impossible to bust a tap in an R & S Tapper for reversing action is lightning fast.

Write for new booklet that tells the complete story.

THE RICKERT-SHAFER CO.
650 W. 11th ST. ERIE, PA.

—Machine Tools—

For an interesting display of new, up-to-date Machine Tools and allied equipment, as well as lists of used and rebuilt machines, consult Hitchcock's

Machine Tool Blue Book

It's a publication similar to this, but devoted to the advertising of metal-working machines and devices of every description. A copy will be sent you free on application.

Hitchcock Publishing Co.
508 So. Dearborn St., Chicago, Ill.

NICHOLSON

EXPANDING MANDRELS



They act as internal chucks for holding work while being machined on lathes, millers, grinders or shapers. Made in 14 different sizes taking bores of every fractional part of an inch from $\frac{1}{2}$ " to 7". Sold singly or in sets. Write for Bulletin 530.

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2, 3 and 4 Way Types



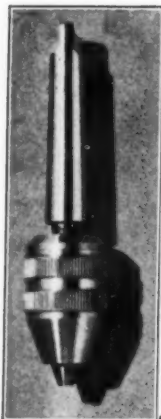
For operating air, water, steam or oil, single and double acting cylinders. Made in lever, foot, solenoid and motor operated styles for pressures up to 300 lbs. Hydraulic Valves up to 5000 lbs.



Send Quickmail Coupon No 74 for Bulletin.

Other Products—Arbor Presses, Flexible Couplings, Steam Traps, Steam Separators, Steel and Stainless Steel Floats, etc.

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DRILL CHUCKS

With Hardened Steel Jaws

Capacity 0 to $\frac{1}{2}$ " fitted with No. 1 or No. 2 Morse taper shank . \$1.25 ea.

No. 1 or No. 2 Morse taper shanks with $\frac{1}{2}$ " x 24 thread 73c ea.

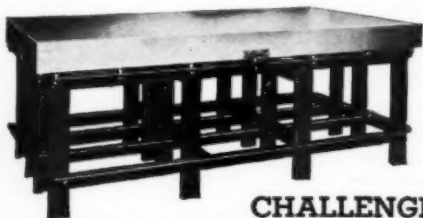
Chucks without shanks . . . 52c ea.

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MADE BY

NIELSEN, INC.

LAWTON, MICH.



CHALLENGE

SEMI-STEEL LAYOUT PLATE

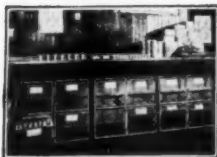
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Ideal for use wherever a true, rigid, smooth surface is required for mechanical or assembly work. Standard sizes 12x18 to 48x96 inches. Latter size is a full 6 inches high. Arc-welded frame, optional, has 32 lock-leveling screws. Write today for further information and prices.

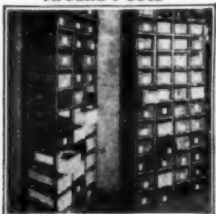
The CHALLENGE MACHINERY Co.
CHICAGO GRAND HAVEN, MICH. NEW YORK

Turn Odd Corners Into Convenient Storage Space!

Under Benches



Around Posts



STACKRACKS lock together to form solid units of any size or shape, and so can be used under benches, behind machines, around posts—anywhere in your shop you want to keep parts and materials.

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Every Box Is Instantly Accessible

Your boxes slide into the patented **STACKRACKS** just as easily as the drawers in your office files. You get at any box in the pile without tugging or hauling—without moving any other box.



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**STACKBIN
CORP.**



Patented

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Stackbin Corp.
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Providence, R. I.

Send me information on
STACKRACKS. The size of
my boxes is.....

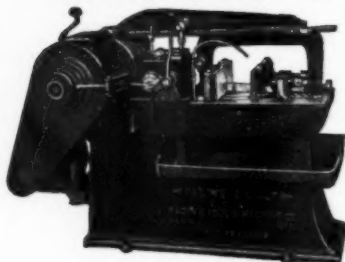
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Firm.....

Address.....

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The New OIL-CUT 6x6" Capacity



Single lever hydraulic control.

Self compensating hydraulic feed.

Graduated dials for feed and pressure.

Self contained hydraulic unit.

Three speeds "built in."

A machine for general shop work, for fastest production and for improved accuracy. The last word in simplified modern design.

"Standard the World Over"

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ANDERSON Improved Balancing Ways



Four Chilled iron discs rotate on sensitive special bearings.

No Leveling Required

A simple and excellent device for balancing straightening and truing.

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ROCKFORD, ILLINOIS

Swing	Greatest Distance Between Standards	Capacity in lbs.
20 in.	20 in.	1,000
40 in.	30 in.	2,000
60 in.	30 in.	2,000
72 in.	66 in.	5,000
96 in.	88 in.	10,000

**That's What Gives
You Many More
Quick Clean Cuts
Practically Without Burr**



The RIDGID Thin Tool— Steel Cutter Wheel

Not cut out of bar stock, this **RIDGID** Cutter Wheel is coined from tool steel sheets, hammered, heat-treated and cast into a solid steel-bearing hub. This exclusive patented wheel gives you a durable cutting edge that means easier cuts—and many more of them.

The cutter housing is steel reinforced — guaranteed not to warp or break. The blade wheel cuts true.

Ask your Jobber

The Ridge Tool Co., Elyria, O., U.S.A.



RIDGID
Tubing Cutter smooths the tube for soldering as it cuts, has integral reamer. Made in 2 sizes, for $\frac{1}{4}$ " tubing up.



RIDGID PIPE TOOLS

UNIVERSAL DRILL BUSHINGS

MADE TO A. S. A. SIZES
MEET ALL YOUR REQUIREMENTS
WITH A 10% SAVING IN COST



INTERCHANGEABLE
LONG-LIFE
EASILY
REPLACEABLE
PROMPT SERVICE



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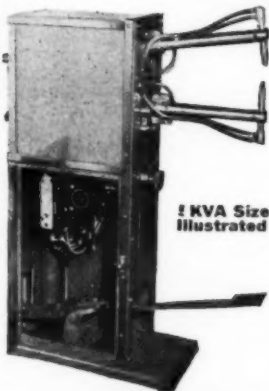
UNIVERSAL ENGINEERING CO.
FRANKENMUTH, MICHIGAN

ARMGLO WELDERS

for 100% welds

ARMGLO automatic timing produces perfect welds, increases production and reduces time costs. To build up your profits, investigate **ARMGLO** welders. Made in sizes from 5 to 200 KVA, foot, motor and air operated.

*Send samples for test
welds with your inquiry*



**! KVA Size
Illustrated**

ARMGLO CO., 3530 W. Pierce St., MILWAUKEE, WIS.

KRW Hydraulic and Sensitive ARBOR PRESSES

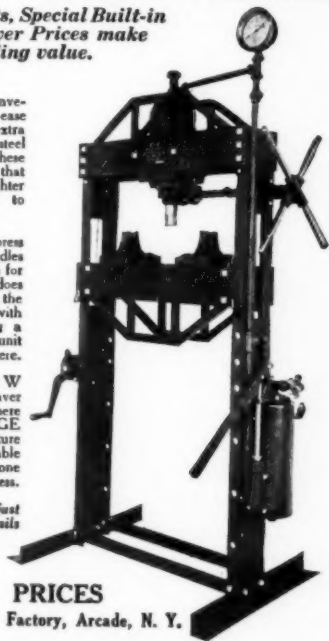
New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.

THE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this K R W feature as a time and labor saver can be appreciated. Also there is **NO EXTRA CHARGE** for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.



PRICES

F. O. B. Factory, Arcade, N. Y.

No. 37—35 ton Hydraulic and Sensitive Arbor Press	\$150.00
No. 37E—50 ton Hydraulic and Sensitive Arbor Press	180.00
No. 37F—70 ton Hydraulic and Sensitive Arbor Press	300.00
Gauge and fittings, \$15.00 extra on all presses.	

K. R. WILSON

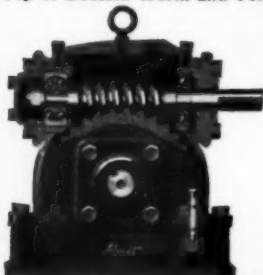
10-16 Lock Street, Buffalo, N. Y., U.S.A.

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SPEED REDUCERS

Top or Bottom Worm and Vertical Type—Ratios: 4-5/6—1
to 100—1 ½ to 98 H. P.



WORM TYPES

Maximum efficiency, greater load capacity. Ball bearings throughout.

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MANUFACTURERS OF

Speed Reducers & Gears

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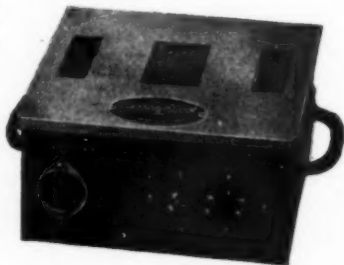
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NEW Combination Etchograph and De-Magnetool

For Marking and
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and Steel Tools or
Parts.

**A Tool Room
Necessity for
Identifying
and for
Prolonging
Life of Cutting
Tools**

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William Brewster & Co., Inc.
42 Church St., New York, N. Y.

**QUALITY
TOOLS
PRODUCE
PROFITS**

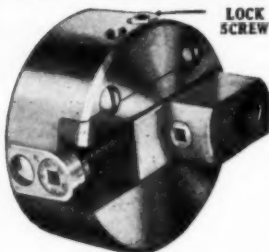
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**The AVEY
DRILLING
MACHINE
CO.
CINCINNATI**



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No. 30

This dovetail designed head is particularly useful where a large offset is required. Body is solid steel, dovetailed hardened tool holder has $2\frac{1}{2}$ " offset. Tension gib and locking device takes strain of micrometer screw. Dial graduated in thousandths, 50 thousandths to a turn, insuring accurate adjustment in boring. Bar capacity is $\frac{1}{4}$ -. $\frac{3}{4}$.

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FLYNN MANUFACTURING CO.

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SpeedWay

More Tool for the Money

Portable
GRINDERS



Does a Hundred Jobs Well

Priced within range of every shop still built to industrial standards, the SpeedWay Type 123 Grinder is the lightest, handiest, most serviceable grinder built for all around use—for both precision and touch-up work. Does a hundred jobs well both as a hand tool and on lathes. Powerful motor operates on both AC and DC—takes up to $1\frac{1}{4}$ inch wheels. All aluminum construction. In case with collet, wrench and 3 grinding wheels.

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SpeedWay Manufacturing Co., 1822 So. 52nd Ave., Cicero, Ill.

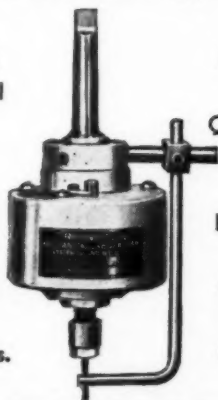
ERRINGTON HYSPO

Super-Sensitive Ball Bearing

Cone Drive

2 to 1 Auto-Reverse Tapping Chuck

Combination
Bronze & Ball
Bearings
Thru-Out
—
Easy and
Economical
Replacement
of
Cone-Clutches.



Depth gauge
facilitates
Quick-Handling
Especially
on
Bottom-Holes
—
Other Styles
and Sizes
0" to 2" taps

Size	Taps in Steel	Taps in Cast Iron	Price	Code
No. 00	0" to 3/16"	to 1/4"	\$35.00	Phlam
No. 0	to 3/8"	to 1/2"	\$50.00	Phalanx

The principle on which this Style is designed is especially effective on very small tapping; whereas in the No. 0 size the Frictional Grip is Greatly **INTENSIFIED**, to cover a wider range, without loss of sensitiveness.

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HIGH SPEED SHEARING

of Irregular Shapes — Ring and Circle Cutting

The ideal shear for sheet metal work—
absolutely accurate and easily operated
metal is sheared and not punched cut any-
where, no starting holes required for inside cut-
ting only one adjustment for various thick-
nesses of material used.....material does not feed
itself by action of the cutters.....unobstructed cut-
ting vision.....no further finishing required. No
special cutters, pilots, templates, or strippers are
needed.....long life shear blades. Standard equip-
ment furnished for ring and circle cutting.
Write for complete information.



LIBERT MACHINE CO.,

Green Bay, Wis.

Manufacturers of shears since 1915

Libert Method



INVEST IN EFFICIENCY WITH AUTO-SHIFT TABLES

Draftsmen can do better work faster and with less fatigue when they are equipped with Hamilton Auto-Shift drawing and reference tables. That means increased production at less cost to management . . . a possibility worth investigation. Return the coupon today.

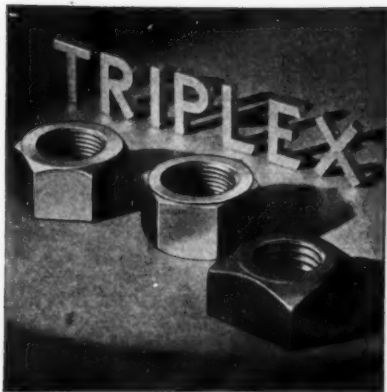
HAMILTON MFG. CO., Two Rivers, Wisconsin

HAMILTON MANUFACTURING COMPANY
Two Rivers, Wisconsin, Dept. H-3-37

I would like to learn more about the Auto-Shift table.

Name

Address



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Toughened to prevent splitting, TRIPLEX Nuts stand wrench abuse. Exact size, fuller threads, 100% bearing surface—hot pressed, cold punched, chamfered-and-trimmed and semi-finished.

Send for samples, catalog and price list.

THE TRIPLEX SCREW CO.
5377 Grant Ave., Cleveland, Ohio

TRIPLEX

Complete
Line of

CAP AND SET SCREWS, BOLTS AND NUTS

"Gusher" Coolant Pump Unit Complete, Compact, Portable



"Gusher" pumps need no priming, have no foot valves and are so constructed that chips and abrasives pass through them without injuring the mechanism. Centrifugal seal eliminates packing. Ball bearing motor mounted safely above the water line delivers a steady, high volume at low pressure.

Elimination of piping and extra parts makes the "Gusher" simple to operate and easy to keep clean. This portable pump and tank combination is a complete unit, always ready for use. Heavy duty casters are optional.

There's a Ruthman pump for every machine at a price you can afford. Send for complete information.

THE RUTHMAN MACHINERY CO.
538 E. Front St., Cincinnati, Ohio



Full Size Professional
**ARC
WELDER**



Full size, heavy duty Aladdin Electric
ARC WELDER only \$39.25 with De
Luxe Accessories! Has efficiency of
Machines costing \$145 to \$800.

Welds all metals and alloys from heavy motor block and castings to fenders and light sheet metal. Also fine for soldering and brazing. Fully guaranteed. Approved by Automotive Test Laboratories. Easily portable on casters.

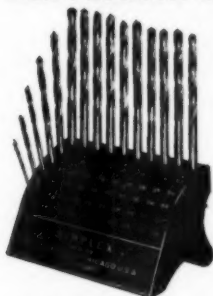
WORKS FROM 110-V SOCKET. Simply plug into 110-Volt or 220-Volt light socket...costs only few pennies an hour to use. Has complete heat controls. Anyone can use easily. Full instructions included.

AMAZING DETAILS FREE! Save money on repairs and maintenance of tools, dies, jigs, molds, machine parts, etc. Write today for sensational facts about Aladdin Arc Welder for \$39.25 including De Luxe Accessories.

Only
\$39.25
With Deluxe
ACCESSORIES

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Don't Look for a Needle in a Haystack



SIMPLEX

Drill Stand

*The Friend of the Mechanic—
Has These Exclusive Features*

1. All drills and numbers face the mechanic.
2. The six horizontal radially spaced rows of drills provide ease in extracting even the smallest drill.
3. The largest fingers will find it easy to pick any drill.
4. The horizontal and vertical arrangements of the numbers can be easily appreciated.
5. A well balanced, precision, zinc die cast product.
6. A great time saver.

Moderately Priced

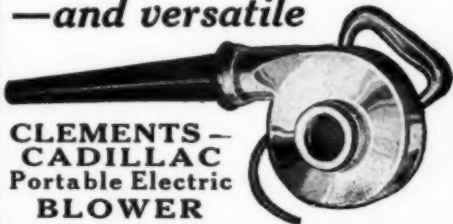
\$1.00 size has drill holes numbered from 1 to 60.

\$1.25 size has 40 drill holes graduated in 1/64" sizes from 1/16" to 1/2".

Immediate Shipments

E. TOMAN & CO.
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**CLEMENTS—
CADILLAC**
**Portable Electric
BLOWER**

Handy because it converts instantly into a suction cleaner—handy because it cleans equipment as well as motors and all intricate machinery—handy because it's portable and easily taken from one job to the other—handy because it saves time and money.

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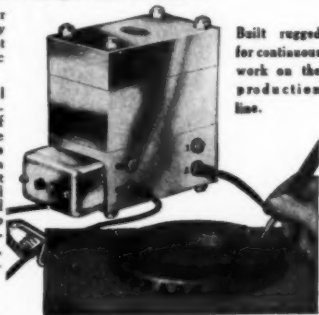
For Light and Heavy Etching

With 24 Stages of Control.

The LUMA Master Etchtool fulfills every marking requirement that can be done by an electric Etching outfit.

A Production Tool with as many as 24 different stages or varieties of control for regulating the depth of marking, this tool can be used for extra light marking of machinist scales, micrometers and fine tools or can be used for extra heavy and deep marking of rough and unfinished iron, cast iron, forgings, steel plates, etc.

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Built rugged for continuous work on the production line.

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Spur-Helical-Worm-Bevel or Special Gears

Grinding	Surface Internal	External Lapping
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Splining and Broaching—A large stock of standard broaches on hand for buyer of small quantities. 25 years of serving the machine trade guarantees you of our quality of work and prompt service.

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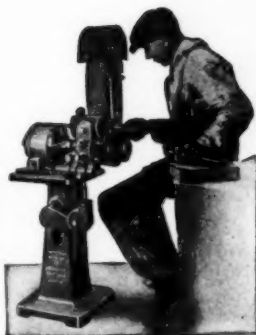
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1919 E. 61st St.,

Cleveland, Ohio

**Save Time on
GRINDING,
SURFACING,
POLISHING**

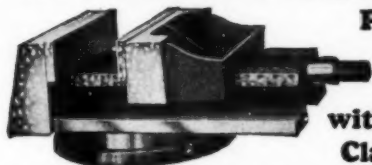
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"No Complaint in 35 Years!"



**PLUNKET
Shaper
Vise
with Circular
Clamp Base**

The Circle Clamp Base Shaper Vise is the same as the Drill Press Vise with the exception of the lugs on the sides and ends. The Circle Base is attached to vise by 4 cap screws which holds it firmly. Base is clamped on top of shaper table by 4 offset clamps furnished for that purpose. Base has center pin on bottom to fit hole in table top and prevents vise from slipping, also providing pivot on which to swing vise to any angle.

WEIGHT 110 POUNDS

No. 3—10" jaws, 2 1/4" deep, opens 8 1/2" \$46.00

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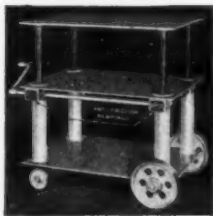
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fits the Black & Decker Grinders, gives you a correct grinding of twist drills.

PRICE ONLY \$18. *Why not own one that you may be able to grind your twist drills the way they should be ground.*

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in your tool room or stamping shop, one man will handle dies that formerly required two to three men to lift. Send for our illustrated circular and see for yourself the many jobs to which this handy tool adapts itself.

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Hamilton, Ohio, U. S. A.

CARROLL Universal Dividing Heads

Twenty Years of Popularity.

"Quality at a reasonable price"

6-inch, 10½-inch and 12-inch swing. Furnished either Right or Left hand type, for all makes of plain or universal milling machines.

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Wm. Carroll & Son
1776 Lexington Ave. (Norwood) Cincinnati, Ohio



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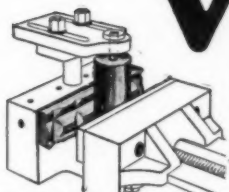
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Gears, speed reducers, sprockets, thrust bearings, flexible couplings, pulleys, etc. A complete line is carried in our Chicago stock. Can also quote on special gears of any kind. Send us your blue prints and inquiries.

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**For Drill Press. Often used on
MILLER, SHAPER or PLANNER.**

Jaws 6', 9' and 12' Long

Flanged all around bottom for bolting down, with three slots at large end not shown.



**All Vises are drilled
and tapped to take
our Standard JIG
ATTACHMENTS**

ANY VISE WILL PAY

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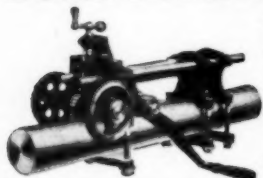
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NAILS, RIVETS & SCREWS



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Adjustable Angle Plate

For grinding any angle accurately.

Made in two sizes

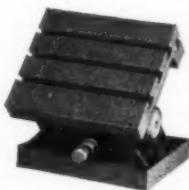
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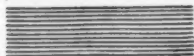


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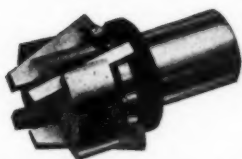
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No Finer
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ADJUSTABLE HOLLOW MILLS

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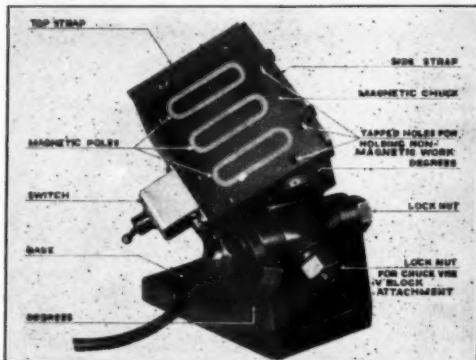
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Cutting capacities up to $2\frac{1}{2}$ ".

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Sectional Broaches
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Also converts a cutter grinder into a surface grinder. Attachments furnished to fit the base are hardened and ground. "V" blocks and Vise.

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1½ H. P. Direct Motor Drive.

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Wales Adjustable Hole Punching Dies

NEVER BECOME OBSOLETE. When you change models you reset them to make the new parts. Small runs are made on BENCH set up, holes in straight lines on PRESS BRAKES, and holes scattered over parts on PUNCH PRESSES. These "INDIVIDUAL HOLE" dies are all contained with the punch and die in the same holder, thus eliminating die setting. Maximum capacity of standard dies $\frac{7}{8}$ " holes in 14 gauge steel or under. Larger holes special. Write for Catalog 5.



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Portable Hydraulic Elevating Tables

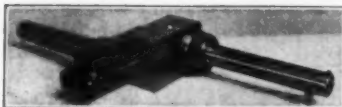
For your portable lifting problems the Midwest Hydraulic Table will meet your requirements. 2000 lbs. Capacity. Max. Height 46½". Min. Height 31". Quick acting, sturdy for moving dies from rack to press. Supporting overhang on machines, etc. A moneysaver in machine shop or production factory.

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Midwest Tool & Engineering Co.

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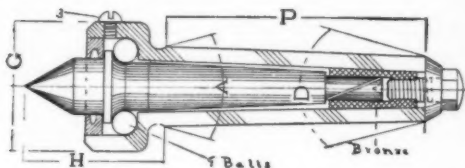


your present equipment, by using the **RUSSELL BORING BAR?** Bores holes from 9/16" to 12" dia. with axis of boring bar parallel to axis of the shank, in one compact tool, with micrometer adjustment.

**RUSSELL BORING BAR CO.
MIDDLETOWN,**

OHIO *Ash for illustrated folder.*

RIGID RESILIENT LIVE CENTER



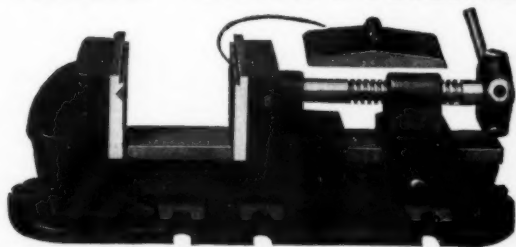
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If it is easier to Roll a heavy Barrel than to Drag it, a Live Center will do more work than a Dead one.

No Lathe is Perfect without one.

Rigid Tool Holder Co., 2000 Witherell St.
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GEM DRILL PRESS VISES MADE IN 3 SIZES

BOOKLET DESCRIBES OUR ENTIRE LINE

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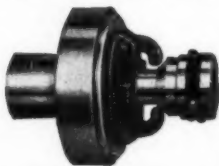
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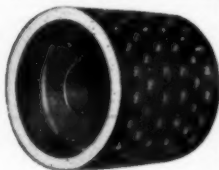
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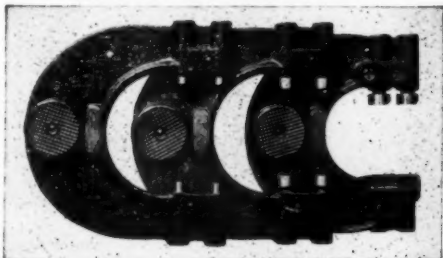
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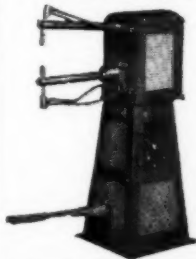


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18" arms—capacity 2 pieces 14 ga. and lighter.



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Only \$150.

New 10 KVA Welders
with 18" arms, capacity
2 pieces 14 ga. and lighter.

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Cuts a Clean Sheared Edge Without Knurl or Distortion

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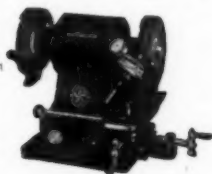
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Straight, cylindrical, double diameter.
Shoulder and profile surfaces.

All kinds of materials

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**Lowest Possible Overhang
Maximum Tool Clearance!**

For Lathes, Grinders and Milling Machines

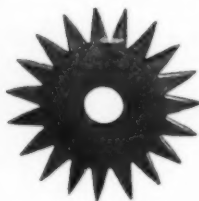
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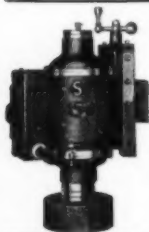
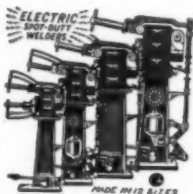
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For use on Planer, Boring Mill,
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**Heavy Duty Grinders and
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Contract Centerless Grinding
Accuracy—Prompt Service

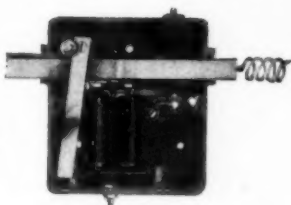
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AN IDEAL
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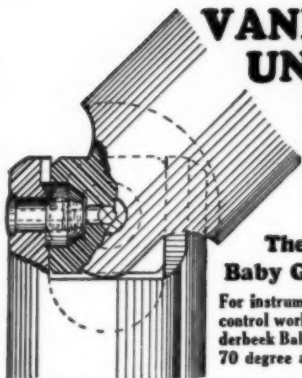
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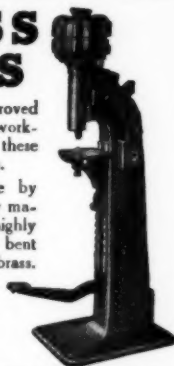
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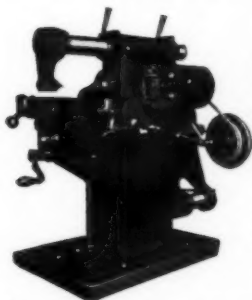
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**for obtaining
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16 standard types—foot—
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Air Cylinders

Hanna Engineering Works, 1763 Elston Av.,

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Air Valves

Galland-Henning Mfg. Co., Milwaukee, Wis.

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Ave., Chicago

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Oliver Machinery Co., Grand Rapids, Mich.

Tannewitz Works, Grand Rapids, Mich.

Wells Mfg. Co., Three Rivers, Mich.

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Grob Bros., West Allis, Wis.

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Buffalo Forge Company, Buffalo, N. Y.

Bearings

Chicago Die Casting Mfg. Co., 2802 W.

Monroe St., Chicago

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Armstrong-Hay & Co., 315 N. Sheldon St.,

Chicago, Ill.

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Belts, V-Type

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Standard Pressed Steel Co., Jankintown, Pa.

Bench Lathes

Sheldon Machine Co., 3256 Cottage Grove

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Hardinge Brothers, Inc., Elmira, N. Y.

Bench Punches

Whitney Mfg. Co., W. A., Rockford, Ill.

Bending Machines, Hand and Power

Armstrong-Bloom Mfg. Co., 341 N. Francisco

Ave., Chicago

Buffalo Forge Company, Buffalo, N. Y.

Leathwaite Mch. Co., T. H. 911 E. 47th., N. Y.

Bins

Stacklin Corp., Providence, R. I.

Blowers

Breuer Elect. Co., 846 Wackhaw St., Chgo.

Buffalo Forge Co., Buffalo, N. Y.

Clements Mfg. Co., 6850 Naragansett,

Chicago

General Blower Co., 401 N. Peoria St.,

Chicago

Standard Electrical Tool Co., Cincinnati, O.

Blowers, Portable Electric

Breuer Electric Co., 846 Wackhaw St., Chgo.

Buffalo Forge Co., Buffalo, N. Y.

Clements Mfg. Co., 6850 Naragansett,

Chicago

Sillsaw, Inc., 3204 Elston Av., Chicago, Ill.

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Triplex Screw Co., Cleveland, Ohio

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Chicago Tool & Engr. Co., 3390 So. Chicago

Ave., Chicago, Ill.

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Russell Boring Bar Co., Middletown, Ohio

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Flynn Manufacturing Co., Detroit, Mich.

Richert-Shafer Co., Erie, Pa.

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R. & L. Toole, Nicetown, Phila., Pa.

Richert-Shafer Co., Erie, Pa.

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Colonial Broom Co., Detroit, Mich.

Bronches, Spine and Square

Colonial Broomings Co., Detroit, Mich.

Taylor Machine Co., Cleveland, Ohio

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Allsteel Press Co., 12015 S. Peoria St.,

Chicago

Dreis & Krump Mfg. Co., 7440 So. Loomis

Hvld., Chicago, Ill.

Brassers, Electric

Grob Brothers, Grafton, Wis.

Oliver Machinery Co., Grand Rapids, Mich.

Briquetting Machines

Grob Bros., West Allis, Wis.

Buffers, Bench

Hammond Mch. Builders, Inc., Kalamazoo,

Mich.

Rotor Air Tool Co., Cleveland, Ohio

Valley Electric Corp., St. Louis, Mo.

Vonnegut Moulder Corp., Indianapolis, Ind.

Buffers, Pedestal

Valley Electric Corp., St. Louis, Mo.

Vonnegut Moulder Corp., Indianapolis, Ind.

Burs, Steel

White Dental Mfg. Co., 10 E. 40th Street,

New York, N. Y.

Bushings, Steel

Acme Industrial Co., 210 N. Laflin St.,

Chicago, Ill.

Baumbach Mfg. Co., E. A., 1812 So. Kil-

bourne Ave., Chicago

Universal Eng. Corp., Frankensmith, Mich.

Bushings, Jig

Acme Industrial Co., 210 N. Laflin St.,

Chicago, Ill.

Colonial Bushings Co., Detroit, Mich.

Call Systems

Wysenbeek & Staff, Inc., 642 Washington

Hvld., Chicago

Cams, Alloy Steel

Modern Collet & Mch. Co., Ecorse, Mich.

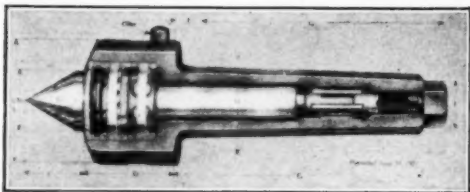
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- Chamfering Machines, Automatic**
Grant & Mcbe. Co., Bridgeport, Conn.
- Chasers, Thread**
Jones & Lamson Mch. Co., Springfield, Vt.
- Checks**
Elite Tool Co., 604 Johnson Av., Brooklyn, N. Y.
Houser Mfg. Co., 1835 No. Paulina St., Chicago, Ill.
Universal Eng. Corp., Frankenmuth, Mich.
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Tomkins-Johnson Co., Jackson, Mich.
- Chucks, Drill and Tap**
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Errington Mach. Lath. Staten Island, N. Y.
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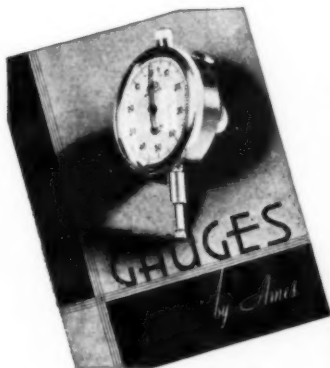
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Dressers, Angle Tangent to Radius

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Whitely's Carbide Tool Co., Detroit, Mich.

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Etico Tool Co., 224 Johnson Av., Brooklyn, N. Y.

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 E. Toman & Co., 2321 W. 21st Place, Chgo.

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Motor Air Tool Co., Cleveland, Ohio

Drills, Electric

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 SpeedWay Mfg. Co., 1822 So. 62nd Ave., Cicero, Ill.
 Standard Electrical Tool Co., Cincinnati, O.
 Temco Electric Motor Co., Leipsic, Ohio
 Wodach Electric Tool Corp., 2525 W. Huron St., Chicago, Ill.

Drill Grinders

Star Mch. & Eng. Co., Bloomfield, N. J.

Drill Jigs, Special

Hecser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.
 Hewak Tool Co., Ferndale, Mich.

Drill Jigs, Universal

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 Hewak Tool Co., Ferndale, Mich.

Drilling Attachments, High Speed

Graham Manufacturing Co., Providence, R. I.
 Henry & Wright Mfg. Co., Hartford, Conn.

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Atlas Press Co., Kalamazoo, Mich.
 Buffalo Forge Company, Buffalo, N. Y.
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Drilling Machines, Multiple Spindle

Buffalo Forge Co., Buffalo, N. Y.
 Henry & Wright Mfg. Co., Hartford, Conn.

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Skilaw, Inc., 3304 Elston Av., Chicago, Ill.
 SpeedWay Mfg. Co., 1822 So. 62nd Ave., Cicero, Ill.
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 Temco Electric Motor Co., Leipsic, Ohio
 White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

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 Henry & Wright Mfg. Co., Hartford, Conn.

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Henry & Wright Mfg. Co., Hartford, Conn.
 Western Machine Tool Wks., Holland, Mich.

Drilling Machines, Sensitive

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 Buffalo Forge Company, Buffalo, N. Y.
 Burke Machine Tool Co., Conneaut, Oh.
 Henry & Wright Mfg. Co., Hartford, Conn.

Drilling Machines, Vertical

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 Buffalo Forge Company, Buffalo, N. Y.
 Henry & Wright Mfg. Co., Hartford, Conn.

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Culman Wheel Co., 1850 Altgeld St., Chgo.
 Hardinge Brothers, Inc., Elmira, N. Y.

Electric Motors with Integral Brakes

Star Mch. & Eng. Co., Bloomfield, N. J.

Electrical Instruments

Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago

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Hamilton Tool Company, Hamilton, Ohio
 Midwest Tool & Engineering Co., Dayton, O.

Emery Stands

Carroll Mfg. Co., L. W., Cincinnati, O.

Emery Wheel Dressers and Cutters

Deemond Stephan Mfg. Co., Urbana, Ohio
 Western Tool & Mfg. Co., Springfield, O.

End Mills

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Putnam Tool Co., Detroit, Mich.

Weldon Tool Co., Cleveland, Ohio

Whitely's Carbide Tool Co., Detroit, Mich.

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Brewster Co., William, 50 Church St., N. Y. C.
 Grinding Machinery Co., Detroit, Mich.
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Buffalo Forge Co., Buffalo, N. Y.

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Sutton Tool Co., Detroit, Mich.

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Morrison Mach. Products, Inc., Elmira, N. Y.

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Modern Cellist & Machine Co., Ecorse, Mich.
 Sutton Tool Co., Detroit, Mich.

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White Dental Mfg. Co., 18 E. 40th Street, New York, N. Y.

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Continental Mch. Specialties, Minneapolis
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 Oliver Instrument Co., Adrian, Mich.
 Universal High Speed Tool Co., 549 Washington Blvd., Chicago, Ill.

Filing Room Equipment

Wardwell Manufacturing Co., Cleveland, O.

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Swedish Gage Co. of Amer., Detroit, Mich.

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Vince Tool Co., Detroit, Mich.

Gages, Gears, Spur and Helical

Vince Tool Co., Detroit, Mich.

Gages, Pin, Plug, Ring and Snap

American Tool Works, Inc., Hartford, Conn.

Gages, Taper

Hartford Special Mch. Co., Hartford, Conn.
Vince Tool Co., Detroit, Mich.

Gear Cutters

Brown & Sharpe Mfg. Co., Providence, R. I.

Gears

Abart Gear & Mch. Co., 4832 W. 16th St., Chicago, Ill.
Chicago Gear Wks., 709 W. Jackson, Chgo.
Taylor Machine Co., Cleveland, Ohio

Gears, Master

Vince Tool Co., Detroit, Mich.

Gears, Worm

Michigan Tool Co., Detroit, Mich.

Gear Checking Machines

Michigan Tool Co., Detroit, Mich.

Gear Motors

Star Mch. & Engr. Co., Bloomfield, N. J.

Generators

Chicago Electric Co., 1336 W. 22nd St., Chicago, Ill.
Janette Mfg. Co., 552 W. Monroe St., Chgo.
Star Mch. & Engr. Co., Bloomfield, N. J.

Grinders, Air

M. H. Products, Detroit, Mich.
Motor Air Tool Co., Cleveland, Ohio

Grinders, Bench

Baldor Electric Co., St. Louis, Mo.
Carroll Mfg. Co., E. W., Cincinnati, O.
Hammond Machinery Builders, Kalamazoo, Mich.
Vonnegut Moulder Corp., Indianapolis, Ind.

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Oliver Machinery Co., Grand Rapids, Mich.
Wyzenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Grinders, Electric

Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.
Shilshaw, Inc., 3304 Elston Av., Chicago, Ill.
Standard Electric Tool Co., Cincinnati, O.

Grinders, Electric Bench

Baldor Electric Co., St. Louis, Mo.
Valley Electric Corp., St. Louis, Mo.

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Haskins Co., R. G., 4654 W. Fulton, Chgo.
Hall Tool Co., 7742 S. Chicago Ave., Chicago, N. A. Strand & Co., 5001 N. Lincoln, Chgo.

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Hammond Machinery Builders, Kalamazoo, Mich.

Grinders, Hand

Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.
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M. B. Products, Detroit, Mich.
Motor Air Tool Co., Cleveland, Ohio
Shilshaw, Inc., 3304 Elston Av., Chicago, Ill.

Grinders, Heavy Duty

Vonnegut Moulder Corp., Indianapolis, Ind.

Grinders, High Speed

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Dumore Co., Racine, Wis.
Hall Tool Co., 7742 S. Chicago Ave., Chicago
M. H. Products, Detroit, Mich.
Universal High Speed Tool Co., 549 Washington Blvd., Chicago, Ill.
Walber-Turner Co., Inc., Plainfield, N. J.

Grinders, Pedestal Electric

Baldor Electric Co., St. Louis, Mo.
Valley Electric Corp., St. Louis, Mo.

Grinders, Swing Frame

Vonnegut Moulder Corp., Indianapolis, Ind.

Grinders and Polishers, Belt

Oliver Machinery Co., Grand Rapids, Mich.

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Carlson Mfg. Co., C. H., Minneapolis, Minn.
Oliver Instrument Co., Adrian, Mich.

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Commercial Centerless Grinding Co., 6538 Carnegie Ave., Cleveland, Ohio

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Armco Co., Milwaukee, Wis.
Production Machine Co., Greenfield, Mass.
Wells Sales Corp., 96 Warren St., New York

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Brown & Sharpe Mfg. Co., Providence, R. I.
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Gallmeyer & Livingston Co., Grand Rapids

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Chicago Tool & Engr. Co., 8380 So. Chicago Ave., Chicago, Ill.

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Pratt & Whitney Co., Hartford, Conn.
Strand Co., N. A., 5001 N. Lincoln St., Chgo
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Grinding Machines, Surface

Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Tap

Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Tool

Hammond Machinery Builders, Kalamazoo, Mich.

Grinding Machines, Universal

Brown & Sharpe Mfg. Co., Providence, R. I.

Grinding Wheels

Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.

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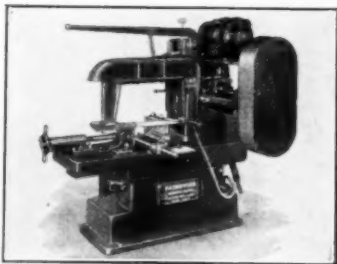
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Wadeco Electric Tool Corp., 2629 W. Huron
St., Chicago, Ill.

Hammers, Timbers
Whitney Mfg. Co., W. A., Rockford, Ill.

Hammers, Mallets and Malls
Chicago Sawblade Mfg. Co., 1200 Elston Av.,
Chicago, Ill.

Hammers, Soft Faced
Greene Tweed & Co., 100 Duane St.,
New York, N. Y.

Hand PUNCHES
Whitney Mfg. Co., W. A., Rockford, Ill.

Hand Saws, Portable Electric
Skilaw, Inc., 5304 Elston Av., Chicago, Ill.

**Hand Screw Machines, Precision
Bench Type**
Hardinge Brothers, Inc., Elmira, N. Y.

Hangers, Ball, Roller and Babbitt
Chicago Die Casting Mfg. Co., 2502 W.
Monroe St., Chicago

Heads, Boring
Fynn Manufacturing Co., Detroit, Mich.

Hobs
Michigan Tool Co., Detroit, Mich.

Hole Cutters
Wyzenbeek & Staff, Inc., 642 Washington
Blvd., Chicago

Hollow Adjustable Mills
Gairing Tool Co., Detroit, Mich.
Reisinger Mfg. Co., Rochester, N. Y.

Hydraulic Valves
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Hanna Engineering Works, 1768 Elston Av.,
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New York, N. Y.

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Reich Mfg. Co., J. H., Dayton, Ohio

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Hamilton Tool Company, Hamilton, Ohio
Hartford Special Mch. Co., Hartford, Conn.
Stewek Tool Co., Ferndale, Mich.

Keyseating Machines
Burr & Son, John T., Brooklyn, N. Y.

Knurls and Holders, for Turrets
Graham Manufacturing Co., Providence, R. I.

Lathe Centers
Rigid Tool Holder Co., Detroit, Mich.
Sturdinatic Tool Co., Detroit, Mich.

Lathe Drives
Colman Wheel Co., 1809 Altgeld St., Chgo.
Hardinge Brothers, Inc., Elmira, N. Y.

Lathe's, Automatic
Jones & Lamson Mch. Co., Springfield, Vt.

Lathe's, Bench
Atlas Press Co., Kalamazoo, Mich.
Delta Mfg. Co., Milwaukee, Wis.
Hardinge Brothers, Inc., Elmira, N. Y.
Rivett Lathes & Grinders, Inc., Brighton, Boston
Sheldon Machine Co., 2355 Cottage Grove
Ave., Chicago, Ill.
South Bend Lathe Works, South Bend, Ind.

Lathe's, Back Geared
Rivett Lathes & Grinders, Inc., Brighton, Boston
South Bend Lathe Works, South Bend, Ind.

Lathe's, Brake Drum
South Bend Lathe Works, South Bend, Ind.

Lathe's, Engine
Sebastian Lathe Co., Cincinnati, Ohio
South Bend Lathe Works, South Bend, Ind.

Lathe's, Gap Bed
South Bend Lathe Works, South Bend, Ind.

Lathe's, Polishing and Buffing
Hammond Machinery Builders, Kalamazoo,
Mich.

Lathe's, Precision Bench
Hardinge Brothers, Inc., Elmira, N. Y.
South Bend Lathe Works, South Bend, Ind.

**Lathe's, Precision Bench Screw
Cutting**
Hardinge Brothers, Inc., Elmira, N. Y.
South Bend Lathe Works, South Bend, Ind.

Lathe's, Screw Cutting
South Bend Lathe Works, South Bend, Ind.

Lathe's, Speed
Schauer Machine Co., Cincinnati, Ohio

Lathe's, Turret
Jones & Lamson Mch. Co., Springfield, Vt.

Leader Pins, Steel
Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.

Leather Belting, All Types
Chicago Rawhide Mfg. Co., 1300 Elston Av.,
Chicago, Ill.

Leather Oil Retainers
Chicago Rawhide Mfg. Co., 1200 Elston Av.,
Chicago, Ill.
Gits Bros. Mfg. Co., 1800 S. Kilbourn, Chgo.

Leather Pkg., Hydraulic & Pneumatic
Chicago Rawhide Mfg. Co., 1200 Elston Av.,
Chicago, Ill.

Live Lathe Centers
Sturdinatic Tool Co., Detroit, Mich.

Lubricators, Automatic
Gits Bros. Mfg. Co., 1800 S. Kilbourn, Chgo.
Greene Tweed & Co., 100 Duane St.,
New York, N. Y.
M B Products Co., Detroit, Mich.
Norgren Co., C. A., Denver, Colo.

Mandrels, Saw and Grinding
Chicago Die Casting Mfg. Co., 2502 W.
Monroe St., Chicago.

Mandrels, Expanding
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Western Tool & Mfg. Co., Springfield, O.

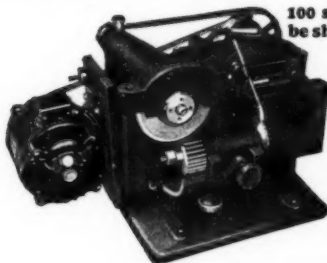
Micrometers
Swedish Gage Co. of Amer., Detroit, Mich.

Milling Attachments
Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Canton, Ohio
Wm. Carroll & Son, Norwood, Cincinnati, O.
Universal High Speed Tool Co., 549 Wash-
ington Blvd., Chicago, Ill.

Milling Machines, Bench
Burke Machine Tool Co., Canton, Ohio
Hardinge Brothers, Inc., Elmira, N. Y.

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Hardinge Brothers, Inc., Elmira, N. Y.
- Milling Machines, Hand**
Burke Machine Tool Co., Connecticut, Ohio
- Milling Machines, Plain**
Brown & Sharpe Mfg. Co., Providence, R.I.
Burke Machine Tool Co., Connecticut, Ohio
- Motors**
Chicago Electric Co., 1838 W. 22nd St., Chicago, Ill.
Janette Mfg. Co., 552 W. Monroe St., Chgo.
- Motors, Small Universal**
Speedway Mfg. Co., Chicago, Ill.
- Motor-Generator Sets**
Chicago Electric Co., 1838 W. 22nd St., Chicago, Ill.
Janette Mfg. Co., 552 W. Monroe St., Chgo.
- Motor Drives, Universal**
Cutiman Wheel Co., 1359 Altgeld St., Chgo.
Sebastian Lath Co., Cincinnati, O.
Steege Machinery Co., 18 S. Clinton St., Chicago, Ill.
- Motors, Electric Ball Bearing**
Valley Electric Corp., St. Louis, Mo.
- Moulds & Lathes, Hammer and Vise.**
Johnson Tool Co., East Providence, R. I.
- Multiple Oilers**
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo
- Nibbling Machines**
Libert Machine Co., Green Bay, Wis.
National Machine Tool Co., Racine, Wis.
- Nitrided Products**
Universal Eng. Corp., Frankenmuth, Mich.
- Oil Cups**
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.
- Oil Gauges**
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.
- Oil and Grease Seals**
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.
- Operating Valves**
Galland-Henning Mfg. Co., Milwaukee, Wis.
- Packing, Hydraulic**
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.
- Packings, Steam**
Greene Tweed & Co., 109 Duane St., New York, N. Y.
- Pillow Blocks**
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chgo.
- Pins and Lacing for Belting**
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.
- Pins, Leader And Dowel**
Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.
Hambrecht Mfg. Co., E. A., 1812 So. Kilbourn Ave., Chicago
- Pipe Cutters**
Ridge Tool Co., Elvira, Ohio
- Pipe Vises**
Ridge Tool Co., Elvira, Ohio
- Pipe Wrenches**
Ridge Tool Co., Elvira, Ohio
- Point Thinning Machines**
Oliver Instrument Co., Adrian, Mich.
- Press Brakes**
Allsteel Press Co., 12015 S. Peoria St., Chicago
- Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.**
- Press Feeds**
Littell Machine Co., F. J., 4125 Ravenswood Ave., Chicago, Ill.
Witteck Mfg. Co., 4309 W. 24th Place, Chgo.
- Presses, Arbor**
Atlas Press Co., Kalamazoo, Mich.
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Shelden Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Wilson, E. R., Buffalo, N. Y.
- Presses, Bench**
Rockford Iron Works, Rockford, Ill.
- Presses, Foot**
Rockford Iron Works, Rockford, Ill.
- Presses, Inclination**
Federal Press Co., Elkhart, Indiana
Rockford Iron Works, Rockford, Ill.
- Presses, Power**
Allsteel Press Co., 12015 S. Peoria St., Chicago
- Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.**
- Federal Press Co., Elkhart, Ind.**
- Rockford Iron Works, Rockford, Ill.**
- Presses, Punch**
Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
Henry & Wright Mfg. Co., Hartford, Conn.
Lawthwaite Mch. Co., T. H., 311 E. 47th., N. Y.
- Presses, Sheet Metal**
Federal Press Co., Elkhart, Indiana
- Presses, Steel**
Allsteel Press Co., 12015 S. Peoria St., Chicago
- Pullers, Gear and Wheel**
Armstrong-Bray & Co., 315 N. Shelden St., Chicago, Ill.
- Pulleys, Die Cast**
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago.
Conway Clutch Co., Cincinnati, O.
- Pulleys, Steel and Wood**
Delta Mfg. Co., Milwaukee, Wis.
- Pulleys, Vacuum Cup**
Vacuum Cup Metal Pulley Co., Detroit
- Pumps**
Brown & Sharpe Mfg. Co., Providence, R.I.
Fulfo Specialties Co., Blanchester, Ohio
Galland-Henning Mfg. Co., Milwaukee, Wis.
- Pumps, Coolant**
Fulfo Specialties Co., Blanchester, Ohio
Tomkins-Johnson Co., Jackson, Mich.
- Pumps, Lubricant**
Ruthman Machinery Co., Cincinnati, Ohio
- Punch, Shear and Bender, Hand**
Armstrong-Bum Mfg. Co., 341 N. Francisco Ave., Chicago
- Buffalo Forge Co., Buffalo, N. Y.**
- Punches and Dies**
Whitney Mfg. Co., W. A., Rockford, Ill.
- Punches, Hand**
Armstrong-Bum Mfg. Co., 341 N. Francisco Ave., Chicago
- Buffalo Forge Company, Buffalo, N. Y.**
- Lawthwaite Mch. Co., T. H., 311 E. 47th., New York**
- Peck, Stow & Wilcox Co., Southington, Conn.**
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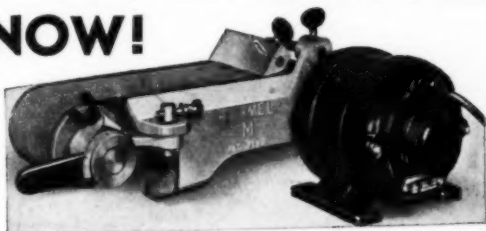
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Pyrometer Instrument Co., 102-106 Lafayette St., New York City

Pyrometers, Optical

Pyrometer Instrument Co., 102-106 Lafayette St., New York City

Pyrometers, Portable & Stationary

Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago, Ill.

Pyrometers, Surface

Illinois Testing Laboratories, 150 W. Austin Ave., Chicago, Ill.
Pyrometer Instrument Co., 102-106 Lafayette St., New York City

Riveters, Multiple Spindle

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Riveters, Pneumatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.
Hanna Engineering Works, 1763 Elston Av., Chicago, Ill.

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.
Hanna Engineering Works, 1763 Elston Av., Chicago, Ill.
Linsley Bros. Co., Bridgeport, Conn.

Red Cutters

Armstrong-Bloom Mfg. Co., 841 N. Francisco Av., Chicago
Lewthwaite Mch. Co., T.H., 311 E. 47th, N.Y.

Router Bits

American Rotary Tools Co., 5 State St., New York, N.Y.
Putnam Tool Co., Detroit, Mich.
Welden Tool Co., Cleveland, Ohio

Sanders, Portable

Restor Air Tool Co., Cleveland, Ohio

Saws, Electric Hand

Delta Mfg. Co., Milwaukee, Wis.

Saws, Universal Portable

Master Woodworker Mfg. Co., Detroit, Mich.

Saw Sharpening Machines

Wardwell Manufacturing Co., Cleveland, O.

Sawing Machines

Continental Mch. Specialties, Minneapolis
Grob Brothers, Grafton, Wis.

Saw Tables

Master Woodworker Mfg. Co., Detroit, Mich.

Scraping Mchs., Hand & Pneumatic

Anderson Bros. Mfg. Co., Rockford, Ill.

Screw Drivers, Electric

Haskins Co., R. G., 4654 W. Fulton, Chgo.

Screw Machine Parts

Modern Collet & Machine Co., Ecorse, Mich.

Screw Machines, Automatic

Brown & Sharpe Mfg. Co., Providence, R.I.

Set Screws

Triplex Screw Co., Cleveland, Ohio

Shafts, Flexible

R. G. Haskins Co., 4654 W. Fulton, Chicago
Pratt & Whitney Co., Hartford, Conn.
Strand Co., N. A., 8091 N. Lincoln St., Chgo.
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Shafts, Hangers & Boxes

Delta Mfg. Co., Milwaukee, Wis.

Shafts, Steel

American Hollow Boring Co., Erie, Pa.

Shapers

Western Mch. Tool Wks., Holland, Mich.

Shaping Machines

Osborne & Sexton Machy. Co., Columbus, O.
Western Mch. Tool Wks., Holland, Mich.

Shears, Hand

Armstrong-Bloom Mfg. Co., 841 N. Francisco Av., Chicago
Beverly Throatless Shear Co., 3007 W. 110th Place, Chicago, Ill.
Lewthwaite Machine Co., T.H., 311 E. 47th St., New York
The National Machine Tool Co., Racine, Wis.
Whitney Metal Tool Co., Rockford, Ill.

Shears, Power

Buffalo Forge Co., Buffalo, N. Y.
Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
Libert Machine Co., Green Bay, Wis.

Shears, Slitting

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Buffalo Forge Co., Buffalo, N. Y.
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Sine Tables

Robbins Engineering Co., Detroit, Mich.

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Oliver Machinery Co., Grand Rapids, Mich.

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Button Tool Co., Detroit, Mich.

Spot Welding Machines, Speed.

Arnold Co., Milwaukee, Wis.
Eisler Engineering Co., Inc., Newark, N. J.
Pier Equipt. Mfg. Co., Benton Harbor, Mich.

Sprockets

Cullman Wheel Co., 1859 Altgeld St., Chgo.

Stampings

Hamilton Tool Co., Hamilton, Ohio

Steel Stamps

Colonial Bushings Co., Detroit, Mich.

Straightening Machines

Whitney Metal Tool Co., Rockford, Ill.

Stud Setters

Apex Machine Co., Dayton, O.
Titan Tool Co., Fairview, Penna.

Tables, Drawing

Hamilton Mfg. Co., Two Rivers, Wis.

Tables, Elevating

Midwest Tool & Engineering Co., Dayton, O.

Tap Extractors

Walton Co., Hartford, Conn.

Tap Holders

Proconier Safety Chuck Co., 14 S. Clinton St., Chicago
Scully-Jones & Co., 1901 S. Rockwell St., Chicago, Ill.

Tapping Machines

Etico Tool Co., Brooklyn, N. Y.
Rickart-Shafer Co., Erie, Pa.
Western Mchs. Tool Wks., Holland, Mich.

Tapping Attachments

Ehrington Mech. Lab., Staten Island, N. Y.
Etico Tool Co., Brooklyn, N. Y.
Proconier Safety Chuck Co., 14 S. Clinton St., Chicago, Ill.
Western Mchs. Tool Wks., Holland, Mich.

Tapping Jigs, Universal

Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

Tapping Machines and Attachments

Burke Machine Tool Co., Conneaut, Ohio
Chaseman Mchs. Tool Co., Green Bay, Wis.
Etico Tool Co., 594 Johnson Av., Brooklyn, N. Y.
Haskins Inc., R. G., 4654 W. Fulton St., Chicago, Ill.
Proconier Safety Chuck Co., 14 S. Clinton St., Chicago, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Thermometers, Resistance Type

Illinois Testing Laboratories, Inc., 150 West Austin Ave., Chicago, Ill.

Threading Machines, Automatic

Grant Mfg. & Mchs. Co., Bridgeport, Conn.
Jones & Lamson Mchs. Co., Springfield, Vt.
Rickart-Shafer Co., Erie, Pa.

Threading Tools

Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago

Hidge Tool Co., Elyria, Ohio.

Rivett Lathes & Grinder Inc., Brighton, Boston

Tool Heads, Universal

Precision Tool Co., Bridgeport, Conn.

Tool Holders

Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago

Michigan Tool Co., Detroit, Mich.

Rigid Toolholder Co., Detroit, Mich.

Western Tool & Mfg. Co., Springfield, O.

Tools

Vinco Tool Co., Detroit, Mich.

Tools, Abrasive

White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Tools, Boring

Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago

Gairing Tool Co., Detroit, Mich.

Tools, Lathes and Planer

Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago

Tools, Machinists'

Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago

Brown & Sharpe Mfg. Co., Providence, R. I.

Tools, Multi-Diameter

Gairing Tool Co., Detroit, Mich.

Transfer Punches

McMahon Co., Frank, Dayton, Ohio

Tube Flanging Machines

Grant Mfg. & Mchs. Co., Bridgeport, Conn.

Tungsten Carbide Tools

Michigan Tool Co., Detroit, Mich.
Willey's Carbide Tool Co., Detroit, Mich.

Turning Tools

R & L Tools, Nicetown, Phila., Pa.

Universal Drill Jigs

Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

Universal Joints

American Tool Works, Inc., Hartford, Conn.
Apex Machine Co., Dayton, O.

Chicago Gear Works, 709 W. Jackson Blvd., Chicago

Used and Rebuilt Machinery

Aaron Machinery Co., 176 Lafayette St., New York City

Adams Ogden R., Rochester, N. Y.

Alamo Engine Co., Hilldale, Mich.

Reatty Machine Mfg. Co., Hammond, Ind.

Belyea Co., Inc., 150 W. 18th St., New York, N. Y.

Bennet-Rafkin Corp., 30 Church St., N. Y. N. Y.

Bernstein & Co., Geo. M., 123 S. Clinton, Chgo.

Besser Mfg. & Mchs. Co., Springfield, Ill.

Bradley Machinery Co., Detroit, Mich.

Brandt Mch. Sales, Pittsburgh, Pa.

Brown Machinery Co., St. Louis, Mo.

Brownell Machinery Co., Providence, R. I.

Clinton Mch. Co., 38 S. Clinton St., Chgo.

Davis Machinery Co., Toledo, Ohio.

Delta Equipment Co., Philadelphia, Pa.

Eastern Machinery Co., Cincinnati, O.

Emmerman, Louis E. & Co., 1761 E. 1st St., Chicago, Ill.

Erie Electric Motor Repair, Inc., Buffalo, N. Y.

Esley Machinery Co., E. L., 525 Reed St., Chicago, Ill.

Falk Mill Supply Co., Inc., Rochester, N. Y.

General Blower Co., 401 N. Peoria St., Chgo.

George, James W., Detroit, Mich.

Goldman, Harvey H., Detroit, Mich.

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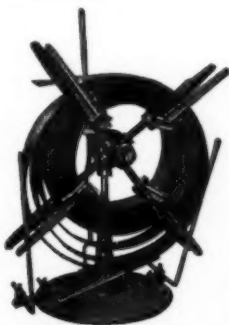
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 Indianapolis, Ind.
 Interstate Mchry Co., 180 S. Clinton, Chgo.
 Irquels Machinery Co., Buffalo, N. Y.
 Johnson & Sons Machinery Co., Wm. C.,
 St. Louis, Mo.
 Jones Machine Tool Co., Cincinnati, Ohio
 Kamie Machinery Co., Philadelphia, Pa.
 Kinney Co., E. A., Cincinnati, Ohio
 Land, J. J., 146 Grand St., New York, N. Y.
 Lang Machinery Co., Pittsburgh, Pa.
 Lucas, J. L., Bridgeport, Conn.
 McDonald Machinery Co., St. Louis
 Machinery Dealers, Inc., New Haven, Conn.
 Marr-Galbreath Mchry Co., Pittsburgh, Pa.
 Midwest Equipment Co., 628 W. Lake St.,
 Chicago, Ill.
 Miles Machinery Co., Saginaw, W. S., Mich.
 Mottler Machinery Co., Charles L., 120 S.
 Clinton St., Chicago, Ill.
 Morey & Co., 45 Mill St., Astoria, Long
 Island, N. Y.
 Norton-Broadway Machinery Co., Cincinnati,
 Ohio
 O'Brien Machinery Co., Philadelphia
 Ohio Mchry & Supply Co., Cincinnati, Ohio
 Ott Machinery Sales Co., Detroit, Mich.
 Osborne & Sexton Mchry Co., Columbus, O.
 Passman Brothers, 705 Washington Blvd.,
 Chicago, Ill.
 Reliance Machinery Sales Co., Pittsburgh,
 Pa.
 Riverside Machinery Depot, Detroit, Mich.
 Rosen, Ralph, Genesee Bldg., Buffalo, N. Y.
 Rosenkrans & Weisbecker, 2309 A. Singer
 Bldg., New York City
 Scott-Banabach Mchry Co., 4697 W. 20th St.,
 Chicago
 Segal Machinery Co., 117 S. Clinton St.,
 Chicago, Ill.
 Simmons Machine Tool Corp., Albany, N. Y.
 Standard Mchry Co., Grand Rapids, Mich.
 Strafer Machinery Co., 136 Liberty St.,
 New York
 Strong, Carlisle & Hammond Co., Cleveland,
 Ohio
 Sun Machinery Co., 28 Van Buren Street,
 Newark, N. J.
 Surplus Stock & Mchry Co., Inc., 1133 W.
 Lake St., Chicago, Ill.
 United Mchry & Supply Co., St. Louis, Mo.
 Victor Machinery Co., 128 S. Clinton Street,
 Chicago, Ill.
 Victor Machinery Exchange, 251 Centre St.,
 New York, N. Y.
 Vine, R. A., Detroit, Mich.
 Wain Mchry Sales, Chan E., Detroit, Mich.
 Waters Machinery Co., Elkhart, Ind.
 Wertman Machinery Co., Cleveland, Ohio
 West Penn Machinery Co., Pittsburgh, Pa.
 White Mchry Co., A. D., 108 N. Jefferson
 St., Chicago
 Wigginsworth Mchry Co., Cambridge, Mass.
 Weisick Machinery Sales, 9 S. Clinton St.,
 Chicago, Ill.

Vacuum Cleaners, Portable

Brewer Elec. Co., 846 Blackhawk St., Chgo.

Vacuum Cleaners, Industrial

Brewer Elec. Co., 846 Blackhawk St., Chgo.

Valves, Air

Hanna Engineering Works, 1763 Elston Av.,
 Chicago, Ill.

Ross Operating Valve Co., Detroit, Mich.

Valves

Galland-Henning Mfg. Co., Milwaukee, Wis.

Hanna Engineering Works, 1763 Elston Av.,
 Chicago, Ill.

Ross Operating Valve Co., Detroit, Mich.

Valves, Foot, Lever & Solenoid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Hanna Engineering Works, 1763 Elston Av.,
 Chicago, Ill.

Ross Operating Valve Co., Detroit, Mich.

Valves, Operating

Hanna Engineering Works, 1763 Elston Av.,
 Chicago, Ill.

Ross Operating Valve Co., Detroit, Mich.

Tomkin-Johnson Co., Jackson, Mich.

Vises, Drilling Machine

Armstrong-Ham Mfg. Co., 341 N. Francisco
 Av., Chicago

Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago

Desmond Stephan Mfg. Co., Urbana, O.

Hueber Mfg. Co., 1638 No. Paulina St.,
 Chicago, Ill.

Graham Manufacturing Co., Providence, R. I.

L. W. Chuck Co., Toledo, Ohio

Martin Tool & Die Works, J. E., Springfield, O.

Modern Machine Tool Co., Jackson, Mich.

National Machine Tool Co., Racine, Wis.

Odin Universal Corp., 110 S. Dearborn, Chgo.

Sheldon Machine Co., 3255 Cottage Grove
 Ave., Chicago, Ill.

Walker-Turner Co., Inc., Plainfield, N. J.

Vises, Drill

Johnson Tool Co., East Providence, R. I.

Modern Machine Tool Co., Jackson, Mich.

Punket Mchry Co., 1823 W. Lake St., Chgo.

Vises, Machinists'

Chicago Tool & Engr. Co., 3880 So. Chicago
 Ave., Chicago, Ill.

Desmond Stephan Mfg. Co., Urbana, Ohio

L. W. Chuck Co., Toledo, Ohio

Odin Universal Corp., 110 S. Dearborn, Chgo.

Sheldon Machine Co., 3255 Cottage Grove
 Ave., Chicago, Ill.

Wentert Tool & Mfg. Co., Springfield, O.

Vises, Milling Machine

Graham Manufacturing Co., Providence, R. I.

Hartford Special Mchry Co., Hartford, Conn.

L. W. Chuck Co., Toledo, Ohio

Odin Universal Corp., 110 S. Dearborn, Chgo.

Punket Mchry Co., 1823 W. Lake St., Chgo.

Sheldon Machine Co., 3255 Cottage Grove
 Ave., Chicago, Ill.

Vises, Precision

Odin Universal Corp., 110 S. Dearborn, Chgo.

Vises, Shaper

Graham Manufacturing Co., Providence, R. I.

L. W. Chuck Co., Toledo, Ohio

Odin Universal Corp., 110 S. Dearborn, Chgo.

Punket Mchry Co., 1823 W. Lake St., Chgo.

Vises, Special

Modern Machine Tool Co., Jackson, Mich.

Welders, Arc

Hobart Brothers, Troy, Ohio

Lincoln Electric Co., Cleveland, Ohio

Welders, Portable

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Armigle Co., Milwaukee, Wis.

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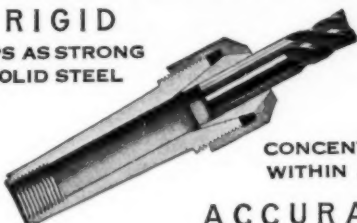
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Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

Write directly to those offering the machines for sale, for prices and full descriptions. If what you seek is not advertised, use the enclosed printed form to make known your wants in either new or used machinery and the publisher will gladly pass them along to the advertisers.

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Grinder, Cincinnati No. 1 1/2 tool and cutter grinder, complete.	Fox hand miller.
Keyseater, Baker No. 2.	Riveter, Grant spinner.
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Lathe, 16"x8" Walcott, q. c. g.
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Mill, No. 2A Garvin univ. compl.
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Bor. mill, 72" Colburn, 2 hds. r. p. t.
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Bor. mill, 84" Sellers, 2 hds. b. d.
Bor. Mill, 10" N. B. P. 2 hds. m. d.
Bor. mill, 10" 16" Betts, 2 hds. b. d.
Boring mill, hor. 3" Rockford. tbl.
Bor. mill, 6" bar Barrett, m. d.
Boring mill, hor., 7" bar N.B.P., m. d.
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Bolt cutter, 1 1/2" Acme, sgl. hd., b. d.
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Drill, rad. 3" Bickford, t. a., b. d.
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Keyseater, No. 3 Mitts & M. b. d.
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Lathe, 14"x6" Carroll, q. c. g., b. d.
Lathe, 18"x8" Lodge & S. q. c. g., b. d.

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Lathe, 30"x14" L. & S. q. c. g., m. d.
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Lathe, 36"x12" Bridge, grd. hd., q. c. g.
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Lathe, 38"x14" Boye & E. q. c. g., b. d.
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Miller, Vert. No. 5-C Becker, m. d.
Miller, univ. No. 1 1/2" B & S., b. d.
Miller, univ. No. 3-A B. & S., d. h.
Miller, thread, 6"x48" Pratt & W.
Miller, vert. No. 4-B Becker, m. d.
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Saw, shaping, 13"x13" Peerless m. d.
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Shear, Alligator, Lewis, cap. 1 1/2".
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Shear, plate, 10"x3 1/2" Niagara, m. d.
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Gear cutter, 60" Eberhardt.
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Grinder, d. c. 2 h. p. 220/440/3/60.
Grinder, disc, No. 8-20" Besly, b. d.
Grinder, plain, 10x24 Landis.
Grinder, sheet, Mattison.
Grinder, roll, Farrel 28x72.
Grinder, surface 8" Heald.
Grinder, sur. 14" Pratt & W., m. d.
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Hammer, power, 90-lb. Justice, b. d.
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Lathe, 24"x12" L. & S. b. d.
Lathe, 18"x8", L. & S., b. d.
Lathe, 26"x18" Wickes g. h. q. c. g.
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Lathe, 48"x30" Pitts'h., p. c. g., b. d.
Lathe, 60"x16" Putnam, b. d.
Lathe, spinning 32" b. d.
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Lathe, turret, 24" Steinle, 6 1/2" hole.
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Miller, vert. No. 6 Becker, m. d.
Miller, B.&S. Universal No. 4 b. d.
Miller, pl. No. 2 Kempsmith, b. d.
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Nibbler, No. 2 Campbell, 3" m. d.

Nuttapper 8 sp. 1" National.
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Pipe mches., 6" Williams.
Pipe machine, 6" Landis b. d.
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Press, No. 5 L. & J. OBI.
Press, No. 3 Bliss, Stiles type.
Press, cam. No. 69N Bliss, dbl act. inc.
Press, hor., No. 43 Toledo 1 1/2" stroke.
Press, No. 93 Toledo, b. d.
Press, hyd. 100-ton Southwark.
Press, No. 55 Toledo, bed 20x19.
Press, No. 57 Toledo, 32"x32", str. 6".
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Press, dbl. crank No. 5 Bliss, 2" str.
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Punch, EF Cleveland, 36" thrt., 1 1/2"-1".
Punch, L. & A. 4"-4". 6" thrt., m. d.
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1—250	West.	250/750
1—125	West.	225/900
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3—80	Diehl	550/1100
1—75	G. E.	575/870
1—60	West.	107/160
2—60	El. Dy.	450/1200
5—60	El. Dy.	525/1050
2—50	West.	225/900
1—50	West.	500/1200
12—40/50	Cr. Wh.	175/700
2—40	West.	120/240
1—40	West.	300/900
2—35	West.	500/1500
1—30	El. Dy.	800/1800
12—20	G. E.	650/1950
1—30	G. E.	500/1500
1—18/22	West.	133/266
1—15	El. Dy.	450/1350
1—15	Reliance	400/1600
1—15	El. Dy.	450/1350
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2—625/750 k. w. DC Gen. interpole, 125 v., 600 RPM coupled on each end of:
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1—22 1/2 k. w. type SK, 125 v., 600 rpm. exciter.
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D. C. Gen. 250 v., conn. to 1400 h. p. type ATI, synch. motor, 6600/2300 v., 514 r. p. m., 3 ph. 60 cycle.

- 1—500 k. w. G. E., type MPC, d. c. Gen 250 v., Com'd interpole, conn. to 710 h. p. Synch. motor, type ATI, 4150 v., 720 rpm.

A. C. MOTORS

Synch. Type

H. P.	TYPE	VOLTS	SPEED
1—2850	G. E.	2300/4150	450
1—1500	G. E.	440/220	180
1—850	G. E.	2300	720
1—500	G. E.	440	1200
1—450	West.	440/220	257
1—225	El. Mch.	2300/4150	450
1—220	G. E.	2200	900

SLIP RING

1—450	West.	2200	875/700
1—400	West.	2200	290
1—400	G. E.	4150/2300	390
1—400	West.	2200	514
1—400	G. E.	2200	885
1—300	Al. Ch.	2200	585
1—250	G. E.	4000/2300	257
1—250	F. Morse	2200	1200
1—250	West.	440/220	585
1—225	G. E.	440/220	1800
1—200	West.	440/220	575
1—200	West.	2200/550	870

SQUIRREL CAGE TYPE

1—250	West.	2300/440	580
1—200	G. E.	850	600
1—200	West.	220/440	1160
1—100	G. E.	440/220	720
1—100	West.	440/220	1200

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Air comp., 8x8" Chicago, NSB.
Air comp., 10x8" Ing-Rand, ER-1.
Air compressor outfits for garages,
1 & 1 1/2 h. p. 1/60/110-220.
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Boring mill, 34" Bullard, side head,
m. d.
Boring mill, 42" Bullard, 2-swivel
heads, for m. d.
Boring mill, 36" Colburn, turret hd.
Boring mill, 30" Bullard VT L,
threading attachment.
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machine, m. d.
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Die sinker, No. 3 P. & W., r. t.
Drill, 16" Avey b. b., m. d.
Drill, 28" Superior, b. g., power fd.
Drill, No. 11-B, Natco, 16-sp., m. d.
Drill, rad., 2 1/2" Fossdick & Holloway.
Drill, radial, 3" Dreeses, tapping att.
Drill, radial, 3 1/2" Canedy-Otto.
Grinder, sur., No. 3 W. & M. mag. ck.
Grinder, Nos. 1, 1 1/2 & 2, tool & cut.
Grinder, 7 1/2 h. p., U.S. dbl. end, 3/60.
Grinder, pl. 11 B. & S. 4x30" (cheap).
Hammer, 40 lb. Bradley horiz.
helve, m. d.
Hammer, power, 50 lb. Boss, b. d.
Hammer, power, 50 lb. Little Giant,
belt drive.
Hammer, 100 lb. Mayer, power.
Hammer, 200 lb. Beaudry, power.
Hammer, 400 lb. Bliss board drop, b. d.
Hammer, 800 lb. Erie SF steam or air.
Hammer, 1000 lb. Chamber'g st. drop.
Hammer, atm. drop, 1500 lb. (nr. new).
Hammer, Syntron Elec. 1/60/110/.
Header, cold, 1 1/2" W.-F. D. S.-OD.
Hoist, chain, 4-ton triplex, Y. & T.
Hoist & crane, 3-ton Canton Portbl.
Jointer, bench, 4" Wallace.
Keyseat miller, No. 4 Burr, 4 1/2"
Keyseater, No. 2 Catlin, cap. 2"x15".
Keyseater, No. 3 Mitts & M., belt.
Lathe, 11"x5" So. Bend q. c. g., 2 cks.
Lathe, 11" Sundstrand, g. h., s. p. d.
Lathe, 14"x19" Fay automatic.
Lathe, 16"x6" Hendey, q. c. g., TA.
Lathe, 16"x6" L. & S., q. c. g.
Lathes, 16"x7" National, q. c. g., (3).
Lathe, 17"x8" Sidney q. c. g., 3-step cone.
Lathe, 20"x8" Hendey q. c. g., tie-barhd
Lathe, 22"x12" Rahn-Larmon, q. c. g.
Lathe, turret, No. 4 W. & S., bar
feed, m. d. (2).
Miller, No. 3 Cincinnati, pl. cone.
Miller, No. 2 Brown & S. pl. cone.
Miller, No. 1 1/2 American, pl. cone (2).

55 Water St., Pittsburgh, Pa.

Miller, pl. No. 15 Garvin, 42x10 1/2x21".
Miller, No. 4 Ohio, table 101".
Pipe machine, 2" Robbins, bench,
for m. d.
Pipe machine, 12" Cox., b. d.
Pipe machine, 12" E. C. & B., s. p. d.
Pipe machine, 18" Wieland, m. d.
Planer, Gray, 56x49x10', 4 heads.
Polishing stand, 3 HP. U.S. 3/60/220.
Press, No. 78 1/2 Bliss T. R., 10" str.
Press, Farrell D. C. bed 34x36" wgt.
13,700 lbs.
Press, No. 18-C Bliss OBI., plain.
Press, 30-ton Lourie hydraulic.
Pump, tripl., 1 1/2"x4" Worthington, b. d.
Punch, triple combination Pels 16.,
m. d.
Punch, & sh. hand, No. 3B. Beloit
5/16"x3".
Punch & shear, 25x24 U. Buffalo,
Punch shear, S. E., 3"x3", L. & A.
universal, motor drive.
Punch, s. e. rapid, No. 000 H. & J.,
16" throat.
Riveters, Shuster, 1" & 3/16", belted
Riveter, No. 120 Grant, cap. 1", m. d.
Rolls, 48"x3" Niagara, initial, power.
Saw, No. 10 Racine 9x9", belted.
Saw, cold, No. 7 Espen-L., 15" belt.
Saw, cold, No. 1 Newton, 4 1/2" belt.
Saw, hack, No. 4 Marvel, m. d.
Saw, hack, 6x6" Peerless, for m. d.
Saw, No. 1 Marvel hack, 4"x4", b. d.
Saw, 6"x6" Racine hack, gear box,
belt drive.
Shaper, 15" Blount, friction type.
Shaper, 20" G. & E. b. g., m. d.
Shaper, 21" Smith & Mills.
Shaper, 24" Barker b. g. V-rim, b. d.
Shaper, 24" Gould & Eberhardt, b.
g., high duty, b. d.
Shaper, 28" Hendey friction vise.
Shear, angle, 6x6x1 1/2" Kling., m. d.
Shear, No. 16-A Niagara ring and
circle, 14 ga.
Shear, throatless 18-M Marshall-
town, motor drive.
Shear, bar 3" United, 24" blade, m. d.
Shear, bar & splitting, cap. 1" plate.
Shear, slit'g, Buffalo 24-S (Armor pl.)
Steam turbines, 100 h. p. 900 rev (2).
Straightener, 1 1/2"x20" Shuster, cut-off.
Turret lathe, 18"x3 1/2" Libby, m. d.
Turret lathe, 24"x6 1/2" Steinel, m. d.
Turret lathe, 26"x4 1/2" Libby, m. d.
Valve refacer, Kwik-Way, cabinet
base, m. d.
Vises, machinists, 2 1/2"x4 1/2"x5". (11).
Welder, Arc 300 amp. 3/60/220.
Welders, arc, 35 amp., transformer.
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Drill, 32" Cin. Bick. upright, s. p. drive.

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Hammer, 100 lb. Bradley, helve.

Hammer, 800 lb. Erie, steam forging.

Hammer, 1100 lb. NBP. steam forg.

Hammer, 3000 lb. Chambersburg double frame steam.

Lathe, 24"x12" N. B. P. motorized, Q. C.

Lathe, 30x24 New Haven, belt.

Miller, 2A B. & S. universal table

42"x11", single pulley drive.

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Miller, No. 2 Kemp Smith, plain,

table 10"x45", belt drive.

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Automatic screw machine, Gridley, 4 spindle model G, 9/16" cap	600.
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Automatic screw machine, Gridley, 4 spdl., 1 1/2", Model G. and F.	600.
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Miller, Wisconsin hand, on pedestal, 12" x 4" x 8 1/2"	125.
Miller, No. 0, Bristol, hand, 14" x 4 1/2" x 14"	135.
Miller, No. 2, Cincinnati, plain, belt drive, 28" x 10" x 19", swivel vise.	600.
Miller, No. 28 Ohio, plain, belt drive, 28x10x13, vise.	500.
Miller, No. 5, B. & S. plain, cone drive, capacity 48x12x18.	750.
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Motor, 20 h.p. G. E., 220 v., 60 cy., 3 ph., 1145 r. p. m., complete.	175.
Planer, 17" x 18" x 3" 6", no name, 1 head.	150.
Planer, 24x24x6 Ohio heavy duty, 1 head.	350.
Planer, 48" x 48" x 8", Powell, heavy duty, 1 head.	500.
Planer, 72x72x12 Gray, 4 heads.	1,500.
Press, No. 0 Hercules, bench type, 3/4" str., 115 lbs. Fly Wheel 25 lbs.	50.
Press, No. 00 La Salle, bench type, 3/4" stroke, 125 lbs.	40.
Press, No. 1 Yankee, solid back, 1 1/2" stroke.	50.
Press, No. 2 solid back, 1 1/2" stroke, 25 ton, 1500 lbs.	125.
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Punch, Kneeland, 10" throat, shears 5" x 1" flats.	100.
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Riveter, No. 4A, High speed hammer, 3/4" capacity, no ctrsft.	200.
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Shear, 10" Niagara circle, No. 20 gauge, cuts 58" dia. circle.	40.
Shear, Niagara, No. 05, circle, No. 18 ga., 4" to 48" circles.	75.
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Shaper, 24" Walcott, H. D., back geared crank, vise and c/s.	525.
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Grinder, No. 2 B. & S. surface m. d.

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Drill, Allen 2 spindle b. b.

Furnace, Detroit Electric (4).

Grinder, No. 65D Sellers drill.

Lathes, 9" Porter-Cable.

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Lathe, 24"x12' Schumacher blks. 35".
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Lathes, spinning, 30" Bliss & Tol.,
roller bearing.
Lathe, 18"x12' L. & S., q.c.g. cone.
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Press, Robinson dbl. cr., 80" wide,
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Saw, hack, 12"x12" Racine, m. d.
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Boring mill, hor. 4½ bar Betts
knee type.
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Drill, radial 3' American.
Drill, radial 3' Morris round column.
Drills, Colburn D4.
Drills, Baker 24".
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Gearcutters, No. 1&3 Adams hobbors
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Grinder, 12"x72" Landis. m. d.
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Grinders, 13x66 Landis universal.
Grinders, 16x66 Landis cyl. plain.
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Hammers, 300 lb. Bradley.
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Hammer, 80 Perfect.
Keyseater, No. 2 M&M.
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Bardons Oliver.
Lathe, 14"x8 Hendey.
Lathe, 18"x8' geared head American.
Lathe, 18"x8' L. & S.

St. Louis, Mo.

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Lathe, No. 3-A Warner & Swasey.
Lathe, turret No. 6 Woods, tilted.
Lathes, turret, 24" Steinel.
Lathes, 3 Gridley 24", Model F., 4 sp.
Miller, Pratt & Whitney spline.
Miller, No. 4 Brown & S., plain.
Miller, No. 3 Hendey, plain.
Miller, Waltham thread.
Miller, No. 2 Kempsmith, univ.
Millers, No. 1 U. S. hand.
Millers, Ingersoll, 27"x24"x10".
Planer, 36"x30"x8 Cleveland openside.
Planers, 60"x48"x10' Gray, 2 heads.
Planers, 24"x24"x6' Gray, 1 head.
Planers, 30"x30"x8' Cincinnati, 2 hds.
Planers, 36"x36"x10' Gray, h. d. 2hds.
Planers, 36"x36"x10' Cincinnati.
Press, 91C Toledo.
Press, No. 2-3 & 4 Marshalltown,
o. b. i., new.
Radial drill, 5' Western.
Saw, No. 14 Higley.
Saw, No. 2 Marvel.
Saws, 6x6 Acme.
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No. 2 Van Norman Re-Li-O, piston M D.
Madison, Internal.
No. 65 Heald, Internal.

Hammers:

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No. 4-V-3 Grant, 18" thr. $\frac{1}{2}$ " cap., MD.
40-lb. Perfect, upright.
40-lb. Bradley, helve.
800-lb. Bement-Miles, steam.
1100-lb. B-M, steam (5).
2500-lb. B-M, steam (3).
6000-lb. B-M, steam.

Lathes:

26"x12" Putnam Pacific type; DBG.
Semi-QCG, Taper Attmt.; 20" chuck; MD.
24"x10" Fay & Scott, SBG, PCG, chk.
18"x8" Lodge & Shipley Patent Hd.
14"x6" Lodge & Shipley Patent Hd.

Lathes-Turret:

16" Type A Gisholt, 6 $\frac{1}{2}$ " hole in spdl.
24" Type I Gisholt, 4-3 $\frac{1}{2}$ " hole.
24" Type I Gisholt, 4-3 $\frac{1}{2}$ " hole.
No. 3 Foster, pl. hd.; 1- $\frac{1}{2}$ " hole.
J & L grd. head, chucking, 2- $\frac{1}{2}$ " hole.

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No. 3 $\frac{1}{2}$ Fox hand & power, 18x6x14".
2" Pratt & Whitney, spline, duplex.
No. 4B Hendey Lincoln type.
No. 3B Owen, pl.; vert. attmt. & div. head.

Planers:

26"x26"x6" Whitcomb, 2 heads.
30"x30"x6" Whitcomb, 1 head.
42"x42"x10" Pond, 1 head.
60"x60"x12" Gray 4 heads.

Presses—Hydraulic:

Elmes; platen 30x30"; ram 8x5".
Hydraulic, 10 ft. betw. uprights.
Elmes 42-ton; ram 12x2"; MD.

Presses—OBI:

No. 61 V&O, $\frac{1}{2}$ " stroke; wt. 950 lbs.
No. 103 Adriance, $\frac{1}{2}$ " stroke; wt. 1450 lbs.
Nos. 2, 3, 4, 4 $\frac{1}{2}$, 5, New Loshbough-Jordan, plain.

Presses—Straight Side:

No. 7 Zeh & Hahneman, geared; wt. 6000 lbs. stroke $\frac{1}{2}$ ".
SG No. 81 Ferracute grd. double crank; wt. 12000 lbs.; stroke 3".
No. 167, No. 168 Toledo, toggle.

Punches:

No. 6 L&A grd.; $\frac{3}{4}$ " in $\frac{3}{4}$ "; 24" thr.
Style C Cleveland, grd.; $\frac{1}{2}$ " in $\frac{1}{2}$ "; 26" thr.

Saws—Cold:

No. 4 Higley; cap. 7" round.
Knowlton; cap. $\frac{3}{4}$ " round; new.

Saws—Band:

5" Wells metal cutting, MD.
Racine, 14" with motor.

Shaper:

16" Barker, cone dr; BG.

Shears:

Lennox, Bevel, $\frac{1}{4}$ " cap.

Threaders—Pipe and Bolt:

2" Rogaco portable electric; pipe.
2" No. 402 Oster Power Boy, electric pipe.
 $\frac{1}{4}$ " Murchey double head, bolt.

Welders:

2 $\frac{1}{2}$ " & 5 KW Dyer, spot, bch., 220 volt.
Type 20D Agnew, 25 KW, 36" thr.

Many Other Machines in Stock—Send us your Inquiries.

BROWN MACHINERY CO.

2333 North Ninth St.,

St. Louis, Mo.

MODERN MA

ENGINE LATHES

- 36"x29" Johnson cone.
36"x18" American, cone, taper.
36"x11" American, cone.
30"x14" LeBlond cone.
30"x14" Lodge & Shipley, cone.
30"x12" Lodge & Shipley, cone.
27"x14" American, cone, taper.
27"x14" Lodge & Shipley Patent Head.
28—57"x12" Putnam Sliding Bed Extension Gap, cone.
26"x24" Niles cone.
26"x12" Rahn-Larmon, cone.
24"x14" Schumacher-Boye, cone.
24"x10" American, cone.
24"x12" LeBlond, cone.
24"x10" Creaves-Klusman, cone.
21"x10" LeBlond Geared Head, taper.
20"x10" Monarch Geared Head, gap.
20"x10" Hendey Geared Head, taper.
20"x8" American, cone, taper.
20"x10" Boye & Emmes, cone.
20"x10" American, cone.
20"x6" Hendey Geared Head.
18"x8" Lodge & Shipley, Geared Head.
20"x8" Hendey, yoke head, taper.
18"x8" Boye & Emmes, cone, taper.
16"x6" Hendey taper, relieving att.
16"x8" Lodge & Shipley Selective Head.
12"x6" Hendey Geared Head, taper.

SHAPERS

- 32" Cincinnati, m. d. thru gear box.
28" Averbek, s. p. d. thru gear box.
28" Ohio, cone.
25" Smith & Mills, cone.
24", 20" Walcott, cone.
24", 20" Cincinnati, cone.
24" Stockbridge, D. C. motor drive.
16" American s. p. d.
24" Queen City, cone.

PLANERS

- 60"x60"x18" Niles, 4 heads.
42"x42"x10" G. A. Gray 1 head.
36"x36"x12" Niles, 4 heads, m. d.
36"x36"x14" Liberty, 3 heads m. d.
36"x36"x10" Niles, 4 heads, m. d.
33"x33"x8" Ohio, 2 heads.
30"x30"x10" Gray 1 head.
24"x24"x6" Gray, 1 head, m. d.
24" Cincinnati Crank, 1 head.
24" Coulter Open Side Crank, 1 head,

BORING MILLS

- 24", 36" Bullard New Era, m. d. side head, late.
30", 36" Gisholt Vertical, belt.
36", 42" Bullard Vertical 2 hds. on rail.
36" Colburn Vertical gear box, 2 heads.
37" Niles Vertical, 2 heads, m. d.
40" King Vertical, 2 heads, m. d.
51" Niles Vertical, 2 heads.

RADIAL DRILLS

- 6" American Triple Purpose, m. d. on arm.
3" American Triple Purpose, m. d. on arm.
5" Cincinnati Bickford Universal, m. d.
6" Drees Universal, gear box.
5" American Triple Geared, gear box.
2½", 3" Carlton Sensitive.
4" Hammond Jack-Knife.

GRINDERS

- No. 33 Abrasive Vert. Surf. m. d. in base.
No. 72A5 Heald Plain Internal, motor drive, hydraulic, very late.
No. 3 Bryant Semi-Automatic Hole Grinder, m. d.
No. 2 Diamond Auto. Surface, belt.
No. 2 Diamond Auto. Surface, m. d.
No. 2, 3 Brown & Sharpe Automatic Surface belt.
No. 25 Heald Rotary Surface, m. d., hydraulic.

EASTERN MACHINERY CO.

MACHINE TOOLS

- 16x48" Diamond Light Duty Face, m. d.
- 60" Bridgeport Face, belt.
- 60" Springfield Face, m. d.
- No. 78 Wilmarth & Morman Automatic Surface, motor drive in base.
- No. 1 LeBlond Universal, Tool & Cutter, belt.
- No. 1 Norton Univ. Tool & Cutter, belt.
- No. 2 Oesterlein Universal Tool & cutter, belt.
- Gleason Cutter Grinder, belt.
- No. 21, 31, 41 Oliver Drill Grinders, m. d. in base.
- No. 4 Landis Universal, belt.
- No. 3 Brown & Sharpe Universal, belt.
- No. 50, 55, 60, 65 Heald Cylinder, belt.
- 6x18", 10x24", 10x30", 10x36", 10x52", 10x72", 12x36", 12x52", 12x72", 16x32", 16x52", 16x72", Landis Plain Self-Contained Cylindrical, belt and motor drive types.
- 6x32", 10x36", 10x50", 10x72", 12x72", 14x72" Norton Plain Cylindrical, belt and motor drive.
- No. 11, 14 Brown & S. Plain Cylindrical.
- No. 218 Besly B. B. Disc, 2 motor drive, 1 year old.
- No. 4 Gardner b. b. Disc, belt.
- No. 6 Diamond Disc, belt.
- No. 12, 120 Gardner Disc, center type.
- No. 24-53" Gardner Horizontal Disc, m. d.

PRESSES

- No. 168 Toledo Toggle Drawing.
- No. 1½ Bliss Cam.
- No. 2A, 3A Bliss Horning.
- D2, DD2 Ferracute Dbl. Action Drawing
- P2, P3, P4 Ferracute Stiles type.
- No. 5 Bliss Stiles type.
- No. 6 Waterbury-Farrel Double Crank.
- No. 30 Toledo Stiles type.

- No. 32P Toledo.
- No. 35 Toledo Stiles, geared.
- S51 Ferracute Double Crank.
- No. 54A Toledo Special.
- No. 65 Consolidated Straight Side, geared.
- No. 94 Bliss Consolidated.

MILLING MACHINES

- No. 4B, 6 Becker Vertical, cone.
- No. 4 Cincinnati Vertical, feed in knee, Timken Bearings, latest type.
- No. 2 Brown & Sharpe Univ. cone.
- No. 1, 3, 4 Cinc. Plain, cone.
- No. 1, 3 Kemp Smith Plain, cone.
- No. 2HD LeBlond Plain, cone.
- No. 2H, 3 Brown & Sharpe Plain, cone.
- No. 3 Hendey-Norton Plain, cone.
- No. 4 Cincinnati Plain, H. P., m. d.
- No. 13B Brown & Sharpe Plain, s. p. d., taper spindle.
- No. 33 Kemp Smith Mfg. s. p. d.
- 4" Pratt & Whitney Spline, m. d.
- 6x14", 6x80" Pratt & Whitney Thread.
- 24" Cincinnati Plain Automatic, m. d., National Standard.
- 24" Cincinnati Duplex, Auto. belt & m. d.
- 48" Cincinnati Spur Driven Auto., belt.
- 48" Cincinnati Worm Driven Automatic, belt.

MISCELLANEOUS

- 20" Bending Rolls, cap. 1" plate.
- 12" Bending Rolls, cap. 1¼" plate, Niles.
- 90" Bending Rolls, cap. 3/16" sheets, Bertsch.
- No. 5 Williams & White Bulldozer, belt.
- No. 4120 Stoll Power Squaring Shear, motor drive, 3/16" cap.
- 14x14" Bury Class L Air Compressor, motor drive.
- 10x10" Clayton Double Cylinder Air Compressor, belt.
- 15, 30 ton Lucas Power Forcing Press.

Write for our New Stock List No. 37.

65 Spring Grove Ave., CINCINNATI, O.

BARGAINS with SAFETY

BORING MILLS, Horiz.

- 24" Cleveland, Gear Box M. D.
- 24" N. B. P. knee type.
- 34" bar, Landis No. 35 floor type.
- 34", 54" D & H. floor type.

BORING MILLS, Vertical

- 24" Bullard, New Era
- 42" Bullard, Power Rapid Traverse.
- 72" Betts heavy duty.
- 72" Bullard, Self Contained.
- 10" Niles, Pwr. Rap. Trav., M. D.
- 8'-12" Ridgeway Extension Type.
- 10' Pond, h. d., cone.
- No. 3 Oilgear Hyd. Hor. M. D.
- No. 3L LaPoint Hyd. Hor. M. D.
- No. 4 LaPointe, Screw, M. D.

DRILLS, Radial

- 4' and 6' Mueller, Gear Box (2).
- No. 2 Aveymatic 2 Spindle.
- 4' Hammond Sensitive.
- 5' Western m. d.
- 25 H. S. and Multiple Drills, etc.

GRINDERS

- No. 14 Landis Univ. 10"x30".
- 10"x36" Landis Plain (3).
- 12"x36" Landis Plain.
- 6"x32" Norton, self-contained.
- 14x72" Norton, cylinder, s. c.
- 15"x15"x72" Norton Planer type, sur.
- 40" Badger face, Hyd. Feed.
- No. 2 Diamond 36"x12"
- 84" Diamond, face.
- Nos. 55 & 65 Heald Cylinder.
- 53" Bealey Vert. Spin. Disc.
- 14" P & W Surface M. D.
- No. 33 Abrasive Surface (2).

LATHES

- 11"x5' Seneca Falls, 14"x6' Sidney.
- 16"x6' Hender; 16x6 Walcott.
- 18"x9' American, Cone, Q. C. G.
- 18"x6' L & S Grd. Hd., M. D.
- 24"x12' Putnam Q. C. G. Cone.
- 26"x11' Boye & Emmes OCG. Cone.
- 26"x21' N. B. P. Cone, Q. C. G.
- 30"x12' Boye & Emmes Cone T. A.
- 32"x12' & 36"x16' Bridgeford M. D.
- 36"x26' L & S cone Q. C. G.
- No. 1 N. B. P. 42" Carwheel.

MILLERS, Production

- 9" & 12" Pratt & Whitney.
- 28" Cincinnati Semi Automatic

MILLERS, Vertical

- Model CS Becker Continuous.
- Model B Becker, feeds 36x14x15, spd.
- No. 6 Becker, 62" feed, AC M. D.
- No. 14 Garvin, table 20"x40".

MILLERS, Plain

- No. 3 Cincinnati, grd. hd., P. R. T.
- No. 4 Cincinnati, grd. hd., P. R. T.
- No. 2B Heavy, B. & S.
- No. 1 LeBlond, cone, Cullman m. d.

MILLERS, Universal

- No. 2A Brown & Sharpe s. p. d.
- No. 2 Owen Cone.
- No. 2 Brown & Sharpe Cone.
- No. 2BS Milwaukee Grd. Hd. M. D.

MILLERS, Planer Type

- Ingersoll adj. rail, 36"x30"x12".

PLANERS

- 84"x84"x18' N. B. P., M. D 4 hds.
- 72"x60"x18' D & H Openside.
- 48"x48"x10' D & H Openside.
- 48"x36"x16' N. B. P. 2 Hds.
- 48"x36"x10' Cincinnati.
- 42"x36"x12' & 24"x6' Cincinnati, M.
- 30"x30"x10' D & H Openside.
- 17"x17"x4' Whitecomb M. D.

PRESSES

- No. 584 Toledo SS Grd.
- 400 ton Wood Hor. Hyd. Carwheel.
- 400 ton Southwark Hyd. Vert.
- 400 ton N. B. P. Hor. Hyd. Carwheel.

PUNCHES and SHEARS

- 54" H. & J. No. 2 double end.
- No. 28UD Buffalo Armor.
- No. 1 Buffalo Trpl. Comb'n. Armor.
- 156"x4" Hyde Park, Gap.
- 8"x3/16" & 5"x10 ga. Niagaras.

ROLLS

- 17"x14" Niles A. C. m. d.
- 12"x4" H. & J. No. 4.
- 10"x4" Bertsch, pyr.
- 8"x4" Pyramid.

SAWS

- No. 8 Marvel Metal Bandsaw.
- No. 2B Gorton Internal, 74".
- 6" Peerless univ., shaping.
- No. 16 Higley, cold, m. d.
- No. 4B Cochrane & Bly.

TURRET LATHES

- 4L Gisholt—no cross slide carriage.
- 26" Libby, 74" spindle hole M. D.
- 26" Steinle 64" spindle hole M. D.
- 21" Gisholt 34" spindle hole cone.
- 3x36 & 2x24 Jones & Lamson.
- No. 4 Warner & Swasey, 14".

MISCELLANEOUS

- 18" Gridley.
- 24" Gridley Single Spindle M. D.
- Nos. 23, 24 & 34 New Britain chkg.
- No. 12 & 13H B. & S.
- 11" Gleason Bevel Generator M. D.
- Nos. 6B Nazel M. D.
- 200 lb. Bradley, Helve.
- No. 3 Mitts & Merrill.
- 8" and 6" Saunders, Cone.
- 8" & 3" Jarecki.
- 2" Hignall & Keeler.
- 24" Stockbridge, a. c., m. d.
- 24", 30", 16" Smith & Mills Cone.
- 20" G. & E., D. C., M. D.

Send for complete stock list

BENNETT-RAFKIN MACHINERY CO.

OFFICES: 30 CHURCH ST., NEW YORK CITY

-BUY NOW-

Automatics

Nos. 2, 2G Brown & Sharpe.
No. 6 Brown & Sharpe.

Boring Machines (Hor.)

5" bar NBP. floor type.
5" bar Newton Portable.
No. 3 Hamilton, 4 1/2" bar.
No. 3-A Universal, 3" bar.
No. 1 Cleveland, 2 1/2" bar.

Boring Mills (Vertical)

24", 36", 42" Bullard, "New Era".
30", 42" and 52" King.
42", 48", 54" and 60" Colburn.

Drills (Ball Bearing)

1, 2, 3, 4, 6 Spindle L-G.
1, 2, 3, 4, 6 Spl. Henry & Wright.
2 and 4-spindle Avey.

Drills (Mfg.)

No. 2 Colburn, 1, 2, 3 and 4-spindle.
Nos. D-4, D-5, D-7 Colburn.
No. 210 L&S spdl. Barnes.
20" Barnes, all geared.
No. 4 Bausch, mult.

Drills (Radial)

3" Carlton sensitive.
4" American Triple purpose.
5" American, full univ., m. d.
6" Western.
6" American Triple purpose.

Gear Cutters

Nos. 2, 3 & 12 Barber-Colman.
Nos. 9-H & 18-H G. & E. hob.
No. 16HSB Gould & Eberhardt.
Nos. 7, 6, 62, 65 Fellows.
6" Gleason bevel gear.

Grinders (Plain)

Hein Centerless.
Nos. 10 and 12 B. & S.
6" x 32" Norton.
10" x 18", 24", 36" Norton.
10" x 50", 72", 96" Norton.
10" x 36", 52" Landis.
14" x 36", 50", 72" Norton.
18" x 96" & 18" x 120" Norton, m. d.
20" x 160" Landis, m. d.

Grinders (Univ.)

No. 13 B. & S. cutter & tool.
No. 2 & No. 24 Bath universal.
No. 14-10" x 30" Landis.
No. 4-12" x 66" Landis.

Grinders (Misc.)

No. 14 Landis, Internal.
No. 70 Heald, Internal.
No. 10 & No. 16 Blanchard surface.
No. 16A Blanchard surface.
No. 25 Heald rotary surface.
15" x 17" x 72" Norton, o. s., surf.
No. 1 Gardner, hyd., face.
36" x 84" Diamond, hyd. face.

Lathes

No. 3 L. & S. Duomatic.
No. 12 LeBlond Multi-Cut.
14" x 6" American geared head.
18" x 5" L. & S. sel. grd. hd.
18" x 10" American geared head.
20" x 8" American geared head.
20" x 22 1/2" x 9", 14" L. & S. sel. g. h.
24" x 27 1/2" x 12", L. & S. sel. g. h.
25" x 27 1/2" x 36" LeBlond.
36" x 18" L. & S. Patent hd.
36" x 30" Rahn-Larmon grd. hd.
54" x 23" Johnson, T. G.
66" x 21", 39" Putnam t.g., m. d.

Millers (Plain and Universal)

Nos. 0, 2-B, 3-B, 4-B B. & S.
Nos. 1 1/2, 2, 2-A B. & S.
No. 3-B Milwaukee s.p.d.
Nos. 2 & 3 Cinn. h. p., s.p.d.
No. 4 Kempamith Maximillier.
Nos. 4 & 5 Cinn. h. p., s.p.d.

Millers (Mfg.)

No. 3 Sundstrand Rigidmill.
No. 4-35" Cincinnati hydromatic.
No. 5 48" Cincinnati hydromatic.
18" & 24" Cincinnati automatic.
No. 4, & No. 5 Lees-Brad.
36" x 36" x 12" Newton Duplex.
39" x 44" x 20" Ingersoll slab.

Millers (Vert.)

Nos. 1 1/2 & 3-B Milwaukee.
Nos. 2 & 3 Cincinnati h. p.
No. 6 Becker vertical.
No. 3 Brown & Sharpe.

Planers

24" x 24" x 12" Gray.
30" x 30" x 14" Gray, rev. m. d.
30" x 30" x 6", 18" Cincinnati.
36" x 36" x 8", 18" Cincinnati.
36" x 36" x 12" and 24" Gray.
36" x 36" x 14" - 24" Cleveland o.s.
42" x 42" x 30" N-B-P, Rev. m. d.
48" x 48" x 10" Gray.
48" x 48" x 14" Liberty, openside.
56" x 56" x 32" Cincinnati.
60" x 48" x 16" Gray max. service.

Presses

No. 106 Bliss Gap, dbl. crank.
No. 96-F Toledo, double crank.

Shapers

16" Gould & Eberhardt, m. d.
20" & 24" Gould & Eberhardt.

Turret Lathes

No. 4 W. & S.; Timken bearings.
No. 1-A Warner & Swasey.
No. 2-A Warner & Swasey.
No. 3A Warner & Swasey.
No. 2-B and No. 3-B Foster.
No. 4-L Gisholt, 9 1/2 h. s.

HILL-CLARKE MCHY. CO.
645 Washington Blvd., Chicago, Ill.

High Grade Machine Tools

Lathes

42"x20" American Super Production geared head, 18 speed, motor driven, rapid traverse.
18"x10" American Geared Hd. S. P. D.
36"x14" Boye & Emmes, cone, q. c.
32"x12" Bradford cone, Loose Chge.: like new.
36"x20" Bradford cone, Loose Chge.
24"x16" Lodge & Shipley sel. grd. hd. S. P. D.
36"x18" American q. h., s. p. d.
28"x48"x10" Harrington, Slid. Bed.
20"x10" American Grd. Hd. S. P. D.
20"x8" Am. Grd. Hd., M. D., late.

Grinders

16"x52" Landis self contained.
No. 2 Brown & Sharpe Universal.
16"x48" Landis Crankshaft.
16"x48" & 72" Landis Crankshaft.
Type A Production Abrasive Finishing
Nos. 50, 55, 60, 65 and 70 Heads.
6"x18" Landis Plain, Self Contained.
10"x52" Landis Plain, Self Con.
Rivett Internal Grinder.

Gear Cutters

Nos. 61, 615 & 645 Fellows.
No. 6—60" Brown & Sharpe.
36BM Gould & E. Gear Rougher.
No. 3, 26" Brown & S. Gear Cutter.
No. 4, 48" Brown & Sharpe.
Nos. 1, 2, 4 Adams Farwell Gear Hb.
18-H Gould & Eberhardt Hobber.
6", 11", 18" Gleason Gear Generators.

Bolt and Pipe Threaders

1/4" Landis Double Spindle Lanco Hds.
2" Landis Double-Spindle.

Boring Mills

42" Bullard S. P. D.
36".44" Niles-Bement-Pond Side hd. Mill, Rapid Traverse.
42" Niles Boring Mills, 2 heads.
14" Betts, Cone Drive.
60" Niles Boring Mill, 2 heads.

Milling Machines

No. 3 Cincinnati Universal, cone dr.
No. 4 Cinti. High Pwr. Univ. S. P. D.
No. 2 & 3 Kempsmith Plain, M. D.
No. 3 LeBlond H. D. Plain.
No. 3 Kempsmith Universal.
No. 2 Rockford Universal, complete.
No. 3-B Milwaukee Pl., Dbl. O. A.
5B Becker Vertical Mill.
5" Pratt & Whitney Automatic.
18" Cincinnati Plain Mfg. Miller.
Briggs Manufacturing Miller.
No. 7-H Becker Lincoln type.
No. 1 Knight Miller and Driller.

Planers

30"x30"x8" American two heads.
30"x30"x16" Gray, two heads.
24"x6" Ohio.
24"x24"x14" Gray, box table.
42"x42"x10" Cleveland Openside,
3 heads., A. C., M. D.

Radial and Upright Drills

24" Cincinnati Bickford Upright, tap.
2 1/2, 3, 3 1/2, 6" Cinci.-Bick. S. P. D.
3, 3 1/2, 4 American Trip. Pur. S. P. D.
3" Bickford Plain, S. P. D.
No. 2 Colburn Mfg. H. D. 2-spindle.
No. 40 Natco Straight Line Multi.

Shapers

20" Ohio, motor driven.
16", 20", 24" Gould & Eberhardt
motor drive, thru gear box.
16", 20" and 24" G. & E., cone drive.

Miscellaneous

No. 3-B LaPointe Broaching Mche.
80lb. Bradley Cushion Helve Hammer
High Speed Riveting Hammers.
Nos. 1 & 3 Baker Keysseating Mches.
No. 2 Mitts & Merrill Keyseater.
Nos. 1 & 2 Davis Keyseaters.
V-18 Amer. Vert. Broaching Mche.
15, 30 & 50 Ton Lucas Forcing Pr.
96A Toledo Double Crank Press
No. 163B Consolidated Dbl. Crank.
No. 1 & 2-X Garvin Tapping Mches.
No. 4 W. & S. Univ. Turret Lathe.
Nice Variety of Sizes of Presses.

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Cincinnati Machinery & Supply Co., 28 West Second St.,
CINCINNATI, OHIO

Good Machinery, Attractively Priced

BORING MILLS — Horizontal

Cleveland 24" bar.
Niles-Bement-Pond No. 1 portable.
Barrett No. 2, 4 1/2" bar.
Beaman & Smith 5" bar.
Ryerson No. 12, 4" bar.
Niles-Bement-Pond HB3, 5" bar.

BORING MILLS — Vertical

Bullard 24", 36", 42".
Niles Bement Pond 52", 2 heads.
Niles 7-10' Extension.
Niles-Bement-Pond 10-16' Ext.
Betts 90", 2 heads.

MILLING MACHINES

Manufacturing

Gooley & Ed. (Briggs) types A&B.
Cincinnati 18", 24" automatic.
Ingersoll No. 3 combined hvy. duty.
Ingersoll 24" x 24" x 12' planer type.
Ingersoll 24" x 24" x 12' adj. rail.
Ingersoll 24" x 24" x 12' and 16' slab.
N. B. P. 84" x 72" x 24' planer type.

AUTOMATIC SCREW MCHS.

Brown & S. No. 0, 00, 0G, 2, 2G.
Gridley 9/16", 7/8", 1 1/8", 1 1/4", 1 1/2".
New Britain Nos. 22, 24, 33, 45A.
Potter & Johnston Nos. 6A and 7A.
Cleveland 2", 3 1/4", 3", 3 1/2" model A.
National Acme Model C, 1" cap.
National Acme No. 55.

LATHES

Pittsburgh 50" x 73' grd. hd.
Putnam 50" x 30' grd. hd.
Pittsburgh 36" x 38' grd. hd.
New Putnam 36" x 28' grd. hd. c. d.
American 36" x 21' grd. hd. Q. C. G.
Bridgeford 36" x 60' boring & turning.
Bridgeford 36" x 60' boring.
McCabe 28-45" x 12' double spindle.
McCabe 24-48" x 14' double spindle.
LeBlond 25" x 12', cone drive.
LeBlond 25" x 18', cone drive.
Greaves Klusman 16" x 8' m. in base.
Hendey 16" x 6' yoke head.
Monarch 14" x 10' grd. hd.
And 200 other lathes from which to select.

SPECIALS

4—BROWN & SHARPE

No. 0 Hand Screw Machines—motor drive in base—including AC motors. Late type machines! Practically New! EACH — \$600.00.

MILLING MACHINES

Plain and Universal

Cincinnati No. 2, 3, 4 Plain, SPD.
Brown & S. No. 2, 3, 4 Plain; SPD.
Brown & Sharpe No. 2A, No. 2,
No. 4 universal.

MILLING MACHINES

Vertical and Thread

Becker No. 4B, C-1 and C vertical.
Pratt & Whitney 6x14, 6x48 thread.

RADIAL DRILLS

Dreses 3'.
Carlton 4'; gear box; latest type.
Reed Prentice 4'.
Niles Bement Pond 5', 8'.

DRILL PRESSES—High Speed

An assortment of 1, 2, 3, 4 and 6 sp.
high speed ball bear. drill presses.
What are your requirements?

LATHES—Manufacturing

Porter Cable 9x14.
Adams short cut.
LeBlond Nos. 9 and 12 Multi-cut.
Sundstrand Stub.

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Pratt & Whitney No. 12.
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Brown & Sharpe No. 3—26, No. 3—
36, No. 5—50" Gear Cutters.
Fellows No. 6, 61, 615 gear shapers.
Fellows Nos. 7, 71, 712 gear shapers.
Fellows No. 8B burnisher.
Lees Bradner planisher.
Gleason 24" gear planers.
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Cleveland 8 spindle gear hobber.

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Libby 36" Turret; grd. hd.; 7 1/2" spdl.
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Size A. L. & A. 2" thru $1\frac{1}{2}$ ", Single End, 36" Throat, Motor Drive.
No. 000 H. & J. $\frac{5}{8}$ " thru $\frac{3}{4}$ ", Single End, 18" Throat, Motor Drive.
No. 2 H. & J. 1" thru 1", Single End, 15" Throat, Motor Drive.
No. 3 H. & J. $1\frac{1}{4}$ " thru 1", Single End, 30" Throat, Motor Drive.
No. 7 Beatty $1\frac{1}{4}$ " thru 1", Single End, 42" Throat, Motor Drive.
No. 5 Beatty $\frac{3}{4}$ " thru $\frac{1}{2}$ ", Single End, 15" Throat, Flywheel Type.
Rock River $\frac{3}{8}$ " thru $\frac{1}{4}$ ", Single End 36" Throat, Motor Drive.

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No. 6 Hilles & Jones $\frac{7}{8}$ "x96", 36" Throat, Motor Drive.
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2 Sizes 8 Thomas Angle Punches with 50" Tables. Motor Drive.
1 Size 8 Thomas Plate Punch 42" Throat, With Table, Motor Drive.
1 Thomas Plate, With Kling 72" Throat Punch, Punch Plates up to 60"x120".

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No. 2 Hilles & Jones Straightening Roll, $\frac{3}{4}$ " Plate, 50" wide, Motor Dr.
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2—Shaw Cranes and 1 Erie Crane: 7½ ton 57' Span, 230 D. C.

MISCELLANEOUS

Geo. Ohls Press Brake, 10 gauge 10' 6" between housing, Motor Drive.
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14"x6" American geared head.
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16"x8" Walcott, taper relieving.
16"x8" American geared, head.
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18"x8" Lodge & Shipley grd. hd.
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22"x10" Davis.
26"x11" Wicks.
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Special Price For Quick Sale.**

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16" Ohio.
16" and 24" Gould & Eberhardt.
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24" Walcott.
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Nos. 1½, 2B, 3B and 4B B. & S.
Nos. 2 & 2½ Rockford.
Nos. 2, 2½ and 4 LeBlond.
No. 4 Hendey.
No. 4 Kempsmith Maximill.
Nos. 3A & 3A hvy. Brown & S. univ.
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24" and 48" Cincinnati duplex.
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24"x24"x6" Liberty openside.
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30"x30"x12" Cleveland openside.
32"x32"x12" Niles.
36"x36"x8" Gray.
36"x36"x10" Cincinnati.
36"x36"x12" Gray heavy.
36"x36"x16" Cleveland openside.
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150 ton Ferracute Coining.
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 complete equipment. No. 2 Brown & S. plain Miller.

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GRINDERS

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LATHES

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 lathe, taper attachment. 14x19 Fay automatic lathe, MD.
 26x12 Schumacher & Boye belt 6—No. 6 Warner & Swasey FGH
 drive. turret lathes.
 14x10 Hendey geared hd. engine No. 5 Foster FGH universal hand
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 2—14x6 American GH, MD en- No. 6 Warner & Swasey FH turret
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PRESSES

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2 1/2	3/4	5/8	3.30		5	1	1	10.65
2 1/2	7/8	5/8	3.30		5	1 1/8	1	10.65
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4	1 1/32	1	5.05		7	1 1/2	1 1/4	15.00
4	1/2	1	5.65		7	5/8	1 1/4	15.00
4	5/8	1	5.65		7	3/4	1 1/4	17.20
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4	1 1/2	1 1/4	7.15		8	5/8	1 1/4	20.00
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 Brake, 6', 3/16" cap. Power.
 Die Heads, large stock Geometric.
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 Planer, 36"x10' Gray, 2 heads.
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No. 5 CINCINNATI rectangular overarm Milling Machine, m. d.;
 12"-14"-16" HENDEY Lathes, taper attachment; 3' AMERICAN
 Triple Purpose Radial Drill, m. d.

9x9 Peerless.
 Lathes, 16"x10' Hendey, taper att.,
 16"x10' Seneca Falls, q. c. g.; 17"x8'
 LeBlond grd. hd., m. d.; 18"x8'
 Boye & Emmes, q. c. g.; 28"x8'
 American q. c. g.; 20"x10' Prentice
 grd. head; 24"x12' S. & B. q. c. g.
 taper att.; 42"x60' Fitchburg Lo-
 Swing.

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 Shapers, 14" to 25" G. & E., s. p. d.
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36" Bullard with side head, r. p.
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 60" Vertical Mill, 2 heads.

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No. 24 Gardner 53" vert. disc., m. d.
 Diamond surface 16"x48" table.
 Double disc grinders—all sizes.

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 36"x14' L. & S. triple geared.
 36"x14' American triple geared.
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 32"x12' Boye & E., cone head q. c.
 36"x36' LeBlond q. c. motor drive.

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No. 4 & 5 Consolidated inclineable.
 No. 165 Consolidated dbl. crank 36".
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20 k. w. National spot, 36" arms.
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 No. 2B Hy. Brown & Sharpe m. d.
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MISCELLANEOUS

5"x5" Horizontal Air Compressor.
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 Radial 6' Dreeses, s. p. drive.
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 Shaper, 32" Cincinnati, motor drive.
 16"x66" Landis Plain Grinder.
 24" Libby turret, s. p. drive.

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Spot Welder bargain—10 brand new IDEAL spot welders—10 kva 18" arms \$150 ea.
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Press, toggle, No. 165 Toledo;
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Press brake, 10' 18 ga. Ohl.
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9" shaft, 40" bet. housings.
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Shears, 6' $\frac{3}{8}$ " 24" gap; Chicago
Steel 10' $\frac{3}{16}$ " 12' 14 ga. Strains.
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Lathes, gd. hd., 25"x16' Ryerson.
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No. 1 $\frac{1}{2}$, No. 2; B. S., No. 1A.
Millers, vert. No. 3 Knight, pwr. fd.
No. 1 Brown & Sharpe, m. d.
Multiple Punches, Wells, 6' bet.
housings.
Nibblers, Campbell, $\frac{3}{8}$ ".

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Shears, 8' 3/16" 10' 10 ga. Robin.
Shears, Throatless $\frac{1}{4}$ " 12 ga., 10 ga.
Shears, Quickw. $\frac{3}{16}$ " cap. 30" thrt.
Spot Welders, 7 $\frac{1}{2}$, 25 and 35 KW.
Stake riveter & punch, 48" throat.
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3 $\frac{1}{4}$ x40" Greenlee; 3"x36 Acme,
Turret Lathes, W. & S., 3-A, 4, 6.
Wheel press, 150-ton horizontal.
Wire straighten-ers, $\frac{3}{8}$ " Nilson, 8'
Wells, 3/8"x22' No. 5 Wells 3'

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Late Type Brown & Sharpe Auto. Screw Machines

- 1—No. 00 B & S HIGH SPEED Turret Former, regular equipment. Serial No. 9000. Approx.
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 Grinder, surface, No. 2 Brown & S.
 Grinder, surface, No. 2 Reed.
 Grinder, surface, No. 78 Wilmarth &
 Morman.
 Hammer, 1200 lb. Bliss, board drop.
 Ironworker, No. ½ Buffalo.

Lathe, turret, 2¼"x26" Cinc. Acme.
 Lathe, stub, 12" Sundstrand.
 Lathe, bench ½" Rivett, complete.
 Lathe, 18"x14" Prentice, geared hd.
 Lathe, 24"x12" L. & S. crankshaft.
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 Miller, No. 1 Kempsmith.
 Miller, No. 1½ LeBlond plain, h. d.
 Miller, No. 4 LeBlond plain, h. d.
 Miller, No. 13-B B. & S.
 Miller, No. 3 Garvin hand.
 Pipe machine, 4" Oster.
 Planer, Gray 30x30x10" openside.
 Planer 56"x56x12" Gray.
 Planer, Cleveland 48x48x12" open s.
 Press, No. 3 Rockford 25 ton.
 Press, No. 52 Toledo arch.
 Press, No. 56 Niagara s. s. single crk.
 Press, No. 57 Niagara s. s. single crk.
 Screw machine, No. 4 W. & S.
 Shaper, 20" American, auto-oiled, m.d.
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- 1—18"x8', 14"x8' Lodge-S., G. H.

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- 1—10' Niles Vertical Boring Mill.

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- 1—No. 2 Kempnith Universal.
- 1—No. 4-B Brown & Sharpe Plain.
- 1—No. 4 Cincinnati Hi-Power Plain.
- 1—No. 3-B Brown & S. plain miller.
- 1—No. 5 Cincinnati Plain.
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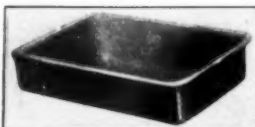
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36" Snyder drill press.
26x12" Putnam Lathe, Q. C. G.
36x36x8 Sellers Planer.
30" Bullard Vertical boring mill.
Model D Becker Vert. milling mch.
50 lb. Automatic drop hammer.
60" Quickwork rotary shear.
No. 248 Pexto lever shear.

42" Barfolder.
No. 1 Baird tumbling barrel.
¾" Marsh stencil machine.
Nos. 1 and 2 L. & J. OBI presses.
No. 2 Swain OBI press.
No. 11 Yates-Amer. gang rip saw.
13" & 22" Fox hand mitre trimmer.
No. 14-B Hi-Speed rivet hammer.
No. 80, 81 & 120 Grant rivet spinner.
No. 14 Avey 2-spindle H.S. Drill.
No. 1 Campbell Nibbler.
4" Jewelers Roll.
42" Pexto Power grooving machine.

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No. 3 Kempsmith plain miller.
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No. 4 W. & S. univ. screw machine.
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No. 4 Warner & Swasey, No. 4
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14"x6" Springfield, taper att.

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No. 4-H LeBlond, s. p. d.
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72" Colburn Vert. Bor. Mill B. M. D.
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12" Cox Pipe Cutting & Thread mch.
Lennox Rotary Bevel Shear, ¾" cap.

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- 1—No. 2G B. & S. Automatic, m. d.
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- 2—No. 6 W. & S. Friction Head, p. f. turret.
- 1—No. 8 W. & S. Screw Machine, m. d.
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att.; b. d.
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d. c., m. d.

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Fosdick No. 2-A horiz. floor type bor.
mill, b. d.
Minster 10"x10 ga. press brake; s.p.d.
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G. & E. 26" B. G. Shaper; s. p. d.
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Ohio 22" shaper; b. g.; cone driven.
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American Can Co. No. 20.b.i Press b.d
Tledo No. 3 o.b.i. Press; b. d.
Smith & Mills 12" plain crank; b. d.
Bliss No. 465 gap shear; ¼"x8"; m. d.

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Cincinnati Nos. 4, 3, 2 pl.; cone dr.
Cincinnati No. 3 univ. p. f.; cone dr.
Rockford No. 2 Plain Miller c. d.
Becker No. 6 vertical h. d.; cone dr.
B. & S. No. 4-B heavy plain; s. p. d.
Brown & S. No. 2 Vert. Miller s.p.d.
Brown & S. No. 1 Y PL Miller Cone Dr.
Brown & S. No. 0 Y PL Miller cone dr.
(2) Garvin No. 12 Miller; c. d.

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3½" Cincinnati-Bickford RC radial,
d. c., motor drive.
5" Fosdick RC radial drill, motor dr.
Fosdick 5" box column radial, s. p. d.
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Barnes 3-spindle 20"; p. f.; belt dr.
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THE E. A. KINSEY CO.

333 West Fourth St.,

Est. 1886

Cincinnati, O.

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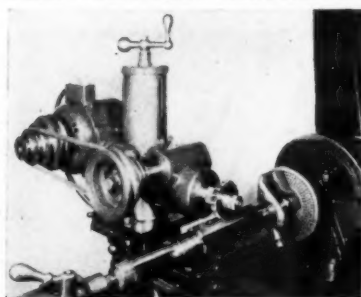
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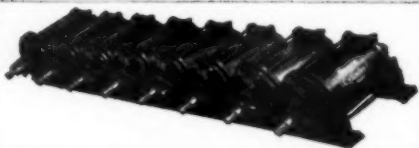


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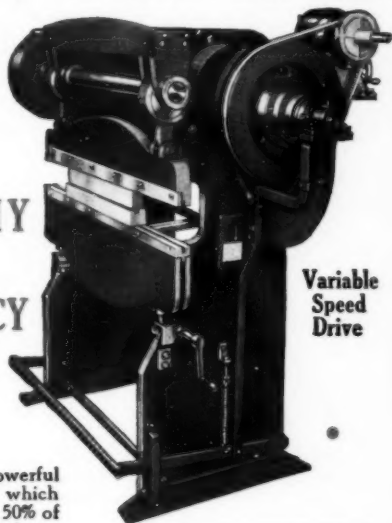
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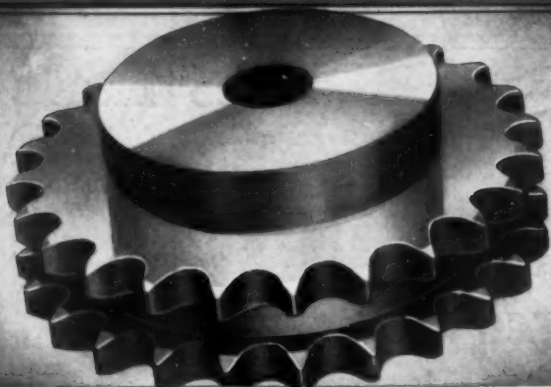
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